# The DENTAL DIGEST




SEPTEMBER, 1934
Vol. 40 No. 9

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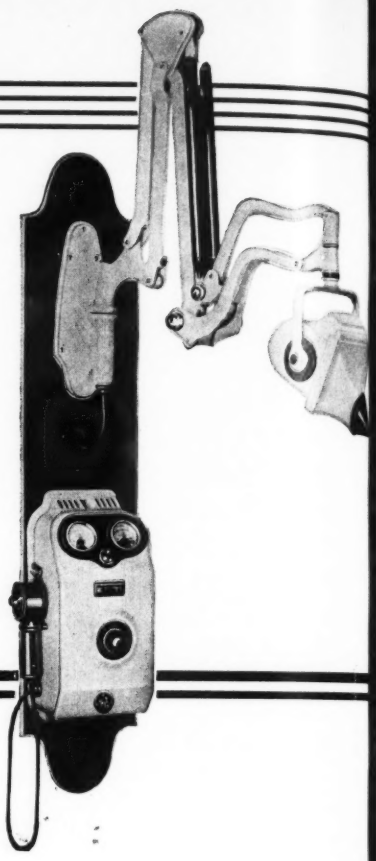

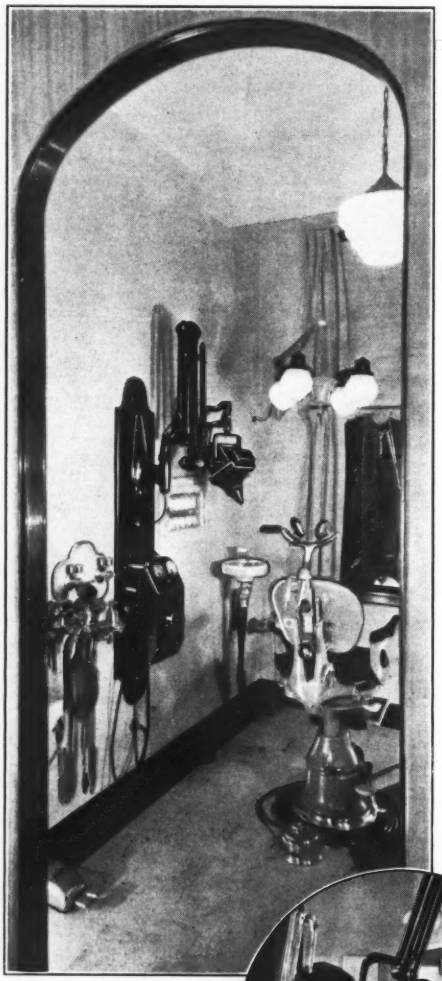

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# The DENTAL DIGEST

VOLUME 40 — *September, 1934* — NUMBER 9





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# EXTENSIVE PORCELAIN JACKET RESTORATIONS

HARRY KAZIS, D.M.D.
Cambridge, Massachusetts

PORCELAIN restorations of one or two teeth are well known in the dental art, and their application presents nothing unusual in dental results. However, when porcelain restorations are made on an extensive scale; for instance, to cover all the teeth in the mouth, then such extraordinary dental effects can be realized as to open vast new fields for the dentist in porcelain ceramics.

Full-mouth porcelain restoration is so unusual that it will probably be better understood if a few opening remarks are first given about how I came to do this work. A few years ago there came into my office a young man whose entire set of teeth had pitted, chocolate-colored enamel. Except for their unsightly appearance, the teeth were healthy, vital, and free from pathologic defects. The pitted condition and discoloration was not the result of negligence-produced decay but was an hereditary trait in the patient's family.[1]

To transform this patient's teeth into normally durable and attractive ones, I decided, after thorough deliberation, to restore them all with porcelain jackets. This restoration of all the teeth was finally completed, and the work was successful in every way; moreover, the teeth have stood up well for the last four years. This proved to me beyond a doubt that extensive porcelain restorations—even so extensive as to involve an entire set of teeth, were fully practical.

Continuing with this work of extensive porcelain restorations, I restored an entire set of similarly defective teeth for a brother of this patient, who had also inherited this family trait of defective teeth. This case, too, and others which followed were so successful as to establish completely the assurance that extensive porcelain jacket restorations were not only possible but entirely practicable.

Patients with many different types of dental difficulties of an extensive nature began to inquire if an application of my work could be made to help them. In particular, a case presented itself of a young man with extremely irregular teeth. His teeth were so irregular that appreciable correction could not be made by regular orthodontic methods. For that and other reasons to be presented later, I decided to perform the correction by extensive use of porcelain jackets. This could be done by making the preparations for the porcelain crowns in such a manner that when the jackets were put on, the teeth would be in proper alinement. Again, the results showed that orthodontia by extensive porcelain restorations was fully dependable.

To convert loathsome, decrepit teeth into beautiful, durable ones; to build over discolored, disordered teeth into natural, ordered ones—these are only the more outstanding of the new fields for dental work opened by extensive porcelain jacket restorations.

## Types Of Cases

This whole field of work may be divided broadly into three types of cases: one type in which the malformation of the teeth is caused by heredity; another type in which the teeth are malformed because of environmental factors; and the third is that class of cases in which extensive porcelain restoration is required not because the teeth are defective, but because they are irregular or badly out of line. In this series of three articles, one article will be devoted to each type, with one outstanding case of that type used as an illustration and as a basis of discussion.

## Hereditary Malformation: Report of Case

In one pronounced case of hereditary malformation of teeth the patient was a young man, aged 20, physically and mentally normal. His teeth, however, were all atrophied; they all lacked enamel; were all unsightly, being discolored with a chocolate brown tint, and were all largely denuded. What is interesting in this case is that this degenerate state of the teeth was an hereditary trait in the p a t i e n t ' s family, as was previously mentioned. Few members of the family have escaped it, from the earliest ancestors known to the patient down to his many relatives now living.

The patient's teeth were vital, as a vitality test showed. Furthermore, they were free from pathologic abnormalities, as shown by roentgenograms. It was apparent, therefore, that the restoration called for would have to build up the teeth to the full strength needed for mastication, preserve them from decay, and give them a natural, attractive appearance.

It has been my experience that the porcelain crown restoration, if properly prepared, builds up the tooth structure to withstand the forces of mastication; seals the tooth completely, thereby preserving it from decay; and finally, it restores the tooth to full natural appearance. There was, therefore, in my opinion, only one right way to restore the patient's entire dentition—to put porcelain jackets on all his teeth.

The preliminary steps for carrying out this procedure were, as has been mentioned, the taking of a vitality test and of roentgenograms. The vitality test, as already mentioned, showed all the teeth to be vital, and the roentgenologic diagnosis was that the teeth were all free from pathologic abnormalities. No cavities were found, but restorations had previously been made. The principal work was begun by taking impressions for study models.

## Study Models

One cannot emphasize too strongly the importance of study models in this type of work. Models should be made before the work is started, so that the bite can be studied carefully from all angles. A second set of models should be made for a check-up after the bite is raised. Again, study models should be made after the case is completed, because that enables one to compare the before and after aspects of the work, and to judge the results that have been attained. In a word, study models need to be made at every stage of the process, as a guide to the best way of carrying out the work, and as a check-up, to judge how far the work done has been done correctly.

Careful study of the first models made clear the difficulties to be contended with in beginning work of this nature. There were no cusps, there was no curve of Spee to guide

[1] Kazis, Harry: Extensive Application of Porcelain Jacket Crowns. Dental Items of Interest. 52:47-436 (June) 1930.

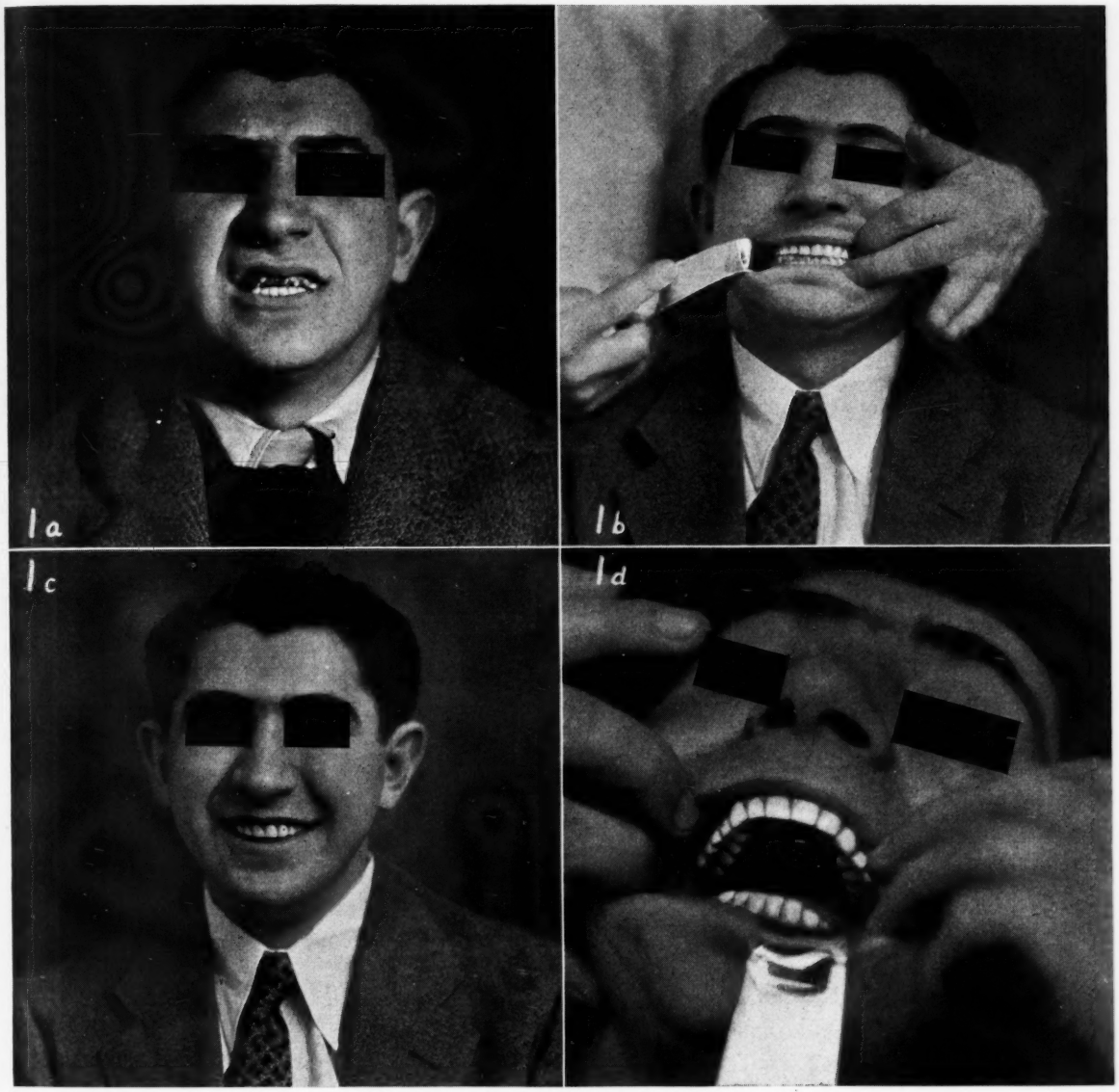


Fig. 1 A—View taken of patient when lower teeth had been jacketed but before jackets were applied to upper anterior teeth. Contrast brings out strongly the unsightliness of the original teeth.

Fig. 1 B—Completed work in articulation with twenty-seven jackets.

Fig. 1 C—Appearance of patient with porcelain restoration completed. Note fine gum line.

Fig. 1 D—Completed work in patient's mouth showing cusps (lingual view). Note fine cusps as far back as second molar. Observe fine arch of restoration.

the operator for anatomic relationships. What bite there was was too uncertain. It was therefore decided to raise the bite and thereby create a new curve of Spee and form a new condylar path between the maxillary and mandibular articulation.

The six upper anterior teeth were jacketed first. The reasons for starting with the anterior teeth were: (1) I was anxious to apply the jackets in the way that would remove the unsightliness of the patient's teeth as soon as possible. (2) If the front teeth were restored first, it would be possible to defer the restoration of the others until the patient could conveniently afford to have the work completed. But soon after the six front teeth were jacketed, a distressing incident followed. The patient returned without three of the jackets. By restoring the anterior teeth first, the bite was raised first at the front, thereby throwing almost all the strain of mastication on the front teeth. Under this excessive strain the jackets broke. I then studied the models and the conditions of the mouth again, and decided to work on the posterior teeth first, beginning with the second molar. As I was not confident at first that a porcelain crown could stand up on the molar, I started there with a gold crown on the upper second left molar. With that restoration as a starting point, I worked all the way around to the second molar on the right side. The same procedure was followed on the lowers, which made a restoration of twenty-seven porcelain crowns. This entire restoration proved successful.

The individual restorations were made in groups of two or three at a time, on different sides of the mouth in rotation; i.e., first, a group of two

or three on the left side, then a group of the same number on the right side. The anteriors were put on in a group of six at one time, in order that they would be lined up better than if applied one or two at a time.

PRECAUTIONS

*Impressions*—1. A properly fitted band should be used around the tooth, slightly larger than the tooth, properly contoured lingually and buccally, so that it does not irritate the gum tissues and does not impinge on the tooth structure.

2. The compound should be moderately heated (not too hot or too cold).

3. Before the impression is taken, one should make sure that the tooth is swabbed in an antiseptic solution. I use a surgical solution of chlorinated soda (Dakin's solution). The purpose of this is to remove all the dust particles, to act as an antiseptic wash, and as a lubricant. Also, the antiseptic has a sedative effect, reducing the pain that comes from the direct pressure of forcing the compound against the tooth. The same practice applies in cementing on the crown. I sterilize the tooth structure before cementing on the crown; then apply phenol to the tooth and dry it with warm alcohol. This lessens the sensitivity of the tooth to a great extent.

*Anesthesia*—Experience has proved to me that throughout this work local anesthesia (2 per cent solution of procaine hydrochloride) is required. In rare cases in which the patient objects strongly to the pain of the injection and the feeling that anesthesia leaves, the preparation can be made without an anesthetic. But that can be practiced only in simple cases of one or two jackets. For more extensive restorations, local anesthesia must be employed.

When a local anesthetic is used in making the preparation for a porcelain jacket, one should never inject for more than one tooth at a time, unless a conductive injection or nerve-block anesthesia is used, especially in the case of the uppers, for which infiltration is the method generally used. The reason for this is that the usual time required for a single tooth preparation is an hour or more. Consequently, if more than one tooth is anesthetized at once, the anesthetic effect in the second tooth is gone by the time one is ready to work on it.

*Shading*—Shading presented a problem in the case described, because there were no normal, natural teeth to go by as a guide for proper shade; the teeth present were all discolored and pitted. It therefore is necessary in a case like this to study carefully the patient's age, complexion, facial features, and other physical aspects. If one has the porcelain work done in a ceramic laboratory, it is highly advisable to collaborate with the ceramist in this study.

*Carving, Molding, and Baking*—Carving and molding also should be made a subject of careful study by the operator. The facial type should be noted—whether ovoid, square, or tapering. From that, one can determine how to mold the teeth and carve their cusps so that they will conform to the patient's physiognomy.

The patient should be at hand when the porcelain baking is done in order that, just before the final finishing and glazing, the operator can try the crown (in the biscuit-bake state) on the tooth to determine the closeness of its conformity with the other teeth. Any adjustments thus found to be needed can then be made before the final baking. In this way the operator saves time over the usual procedure of grinding the finished crown to conform to the necessary length, width, and contour.

*Cementing*—Cementing is another important factor in successful porcelain construction. So much of this work has been set back on account of this difficulty in cementing: 1. In the

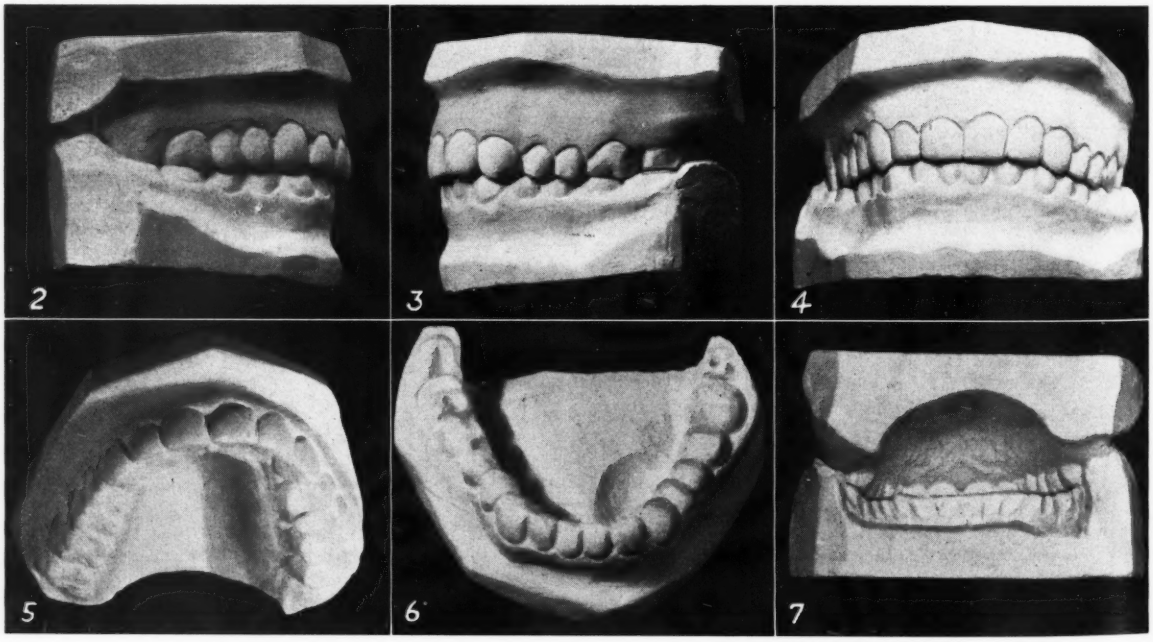


Fig. 2—Right side view of completed work. Note porcelain jackets as far back as second molar.

Fig. 3—Left side view in articulation. Note porcelain jackets as far back as second molar.

Fig. 4—Model showing completed work in articulation.

Figs. 5 and 6—Models of completed work. Twenty-seven jackets in all. Fig. 5 shows upper set; Fig. 6, lower set.

Fig. 7—Lingual view of model of completed work. Note the inclined planes and articulation.

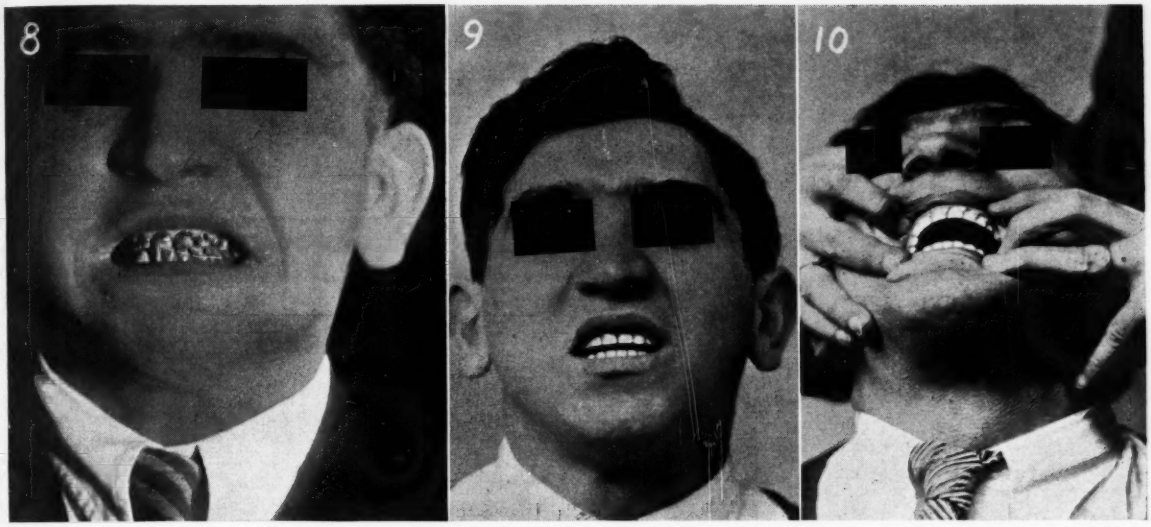


Fig. 8—Before work was begun. A brother of the patient whose case was described in this article.
Fig. 9—Same patient shown in Fig. 8. Work completed.
Fig. 10—Closeup view of same patient shown in Figs. 8 and 9. Note arch of restored teeth.

case of thin jackets the cement, showing through the jacket, changes the shading. To prevent this changing of shade by the cement showing through requires this practice: One should have on hand a supply of the various cements, white, yellow, light yellow, pearl gray, gray, and others. Then the operator should make a test of the various cements by mixing a little of each into a cream mixture with a drop of water and painting it around the inside of the crown, then see the effect it has on the finished tooth—whether the final color blends with the other teeth or not. The operator can then try in turn different mixtures of the various cements until he obtains the mixture needed to give the right shade to the tooth when finally worn.

There is a special new porcelain crown recently developed which prevents this shading difficulty, because it is not transparent, having an inner lining of dentine-colored porcelain. There is a limitation, however, to the use of this crown, because with this extra dentine lining, it is thicker than the usual porcelain crown, and therefore cannot be used on protruding or bulky teeth.

2. A further point of importance in cementing is this: The operator should never cement on more than one or two jackets at a time, because if he does, he will find himself in a predicament. The porcelain crown is a refractory material, and one cannot apply as much pressure to it as one could to a metallic (gold) preparation; therefore, if several jackets are cemented on at once, the cement will have set by the time the operator is ready to put on the later ones; more pressure will thus be required in putting them on than can be safely used on porcelain crowns.

3. The cement, futhermore, must be mixed slightly thinner than for the ordinary gold crown, a sort of light creamy mixture. In filling the cement into the porcelain crown one should not fill the crown more than half full; or better than that, I find

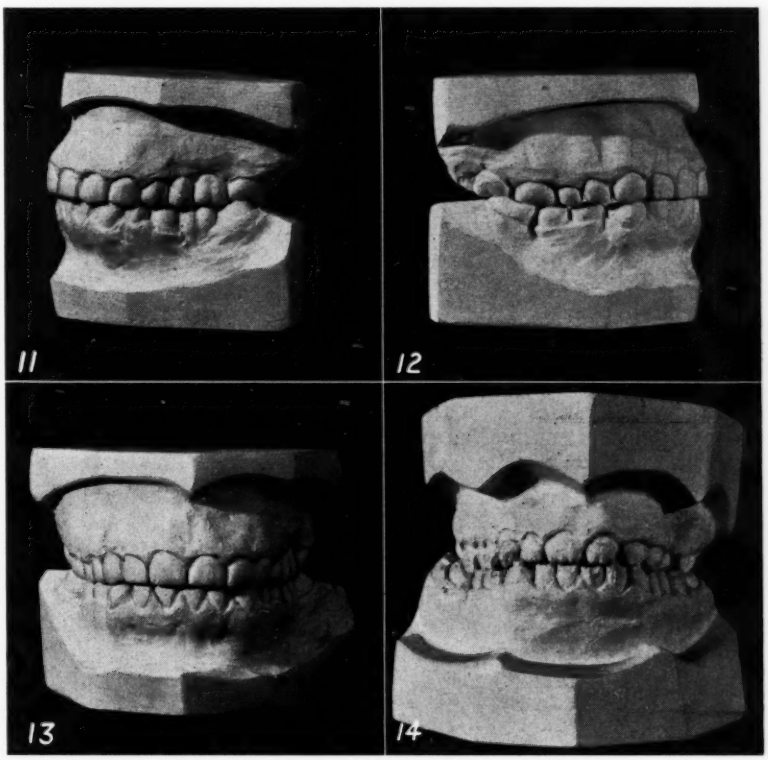


Fig. 11—Models for patient shown in Figs. 8, 9, and 10. Left side view of porcelain jackets with fixed bridges from the upper first bicuspid to the second molar, and from the lower second biscuspid to second molar. A veneer crown is used as abutment on the upper first biscuspid.
Fig. 12—Right side view of models of completed work for patient shown in Figs. 8, 9, and 10.
Fig. 13—Same case as in Fig. 12 showing articulation.
Fig. 14—Models of patient shown in Figs. 8, 9, and 10 showing natural teeth before work was begun.

that by using a narrow-blade spatula and coating the cement around the inner surface of the crown, the result is better than by placing the cement into the crown in one glob. By this method, there is less pressure to be exerted on the stump of the tooth, and, therefore, less chance of fracturing the porcelain jacket. In cementing the crown to the tooth stub one must rotate the jacket slightly and at the same time apply a uniform pressure, hold the crown firmly against the tooth stub for at least five minutes, and not remove the thumb until the cement begins to set. The setting of the cement is indicated by the surplus cement breaking off with a clean fracture.

*Articulation*—A point to observe before the patient is dismissed is to obtain the proper articulation of all surfaces of the teeth and cusps by making sure that no high points are left. That is done by instructing the patient to move his jaws on articulating paper on all the surfaces of the porcelain crowns. The high points thus determined can be ground off. The patient is then dismissed with the advice that should he find his new teeth grinding in spots, he should come back the next day to have them adjusted. In that way one prevents disappointment and grief.

## Physiologic Advantages Of Porcelain Crown

The physiologic advantages of the porcelain crown, particularly in the extensive restorations, ought to be mentioned. With a porcelain crown the tooth is completely sealed. There is then no possibility of food, and consequently of decay, working in under the edges of the crown. Besides, being a refractory material, the porcelain insulates the tooth from sudden temperature changes. By far the greatest physiologic advantage of the porcelain crown is this: If properly prepared, the crown's outer edge meets up flush with the perimeter of the tooth shoulder. The result is a smooth, continuous tooth structure without any sharp protruding edge at the gingival margin.

Such a sharp edge which cuts into the delicate gum tissues is unavoidable in the case of gold crowns. The irritation of the delicate gum tissues against such a sharp protruding edge causes any trace of Vincent's infection or other oral infections to become rapidly worse. When there are many gold crowns in a mouth, therefore, any oral infection, particularly Vincent's infection, spreads rapidly throughout the mouth, and is checked only with difficulty. The smooth joint of the porcelain crown meeting flush with the shoulder edge all around the tooth prevents any such irritation of the gum tissues. The gum line around a porcelain restoration is therefore constantly much healthier than around any other restoration; consequently, Vincent's infection spreads less easily, or is entirely prevented.

This feature of the porcelain crown is a considerable advantage when a restoration of only one tooth is made. When extensive restorations are to be made, involving many teeth, the gain in freedom from gum irritation and the improved health of the gums is so marked that almost on this account alone the porcelain jacket crown must be chosen for extensive restorations.


Fig. 15—General case; view before jackets were ready.
Fig. 16— View after work was completed.

## Conclusion

I believe that cases of the type described in this article—teeth that are decrepit by heredity—are not rare. I feel, rather, that many dental malformations of this type exist, that mouths with unsightly teeth are prevalent. It is my impression, however, that many of these cases have gone unnoticed by dentists, or, when attended to, only a superficial restoration (probably a few front teeth extracted and replaced by a fixed bridge) has been made. Another superficial remedy applied to these cases is to fill the teeth, where pitted, with cement. This only gives a patchy appearance to the teeth, and is not even of lasting effect, because the cement soon dissolves and the restoration crumbles away.

It is recommended to dentists to keep the extensive porcelain restoration well in mind, for it makes a real transformation of such teeth into teeth of full natural durability—something which is a blessing to the patient, while it opens a vast new field of profitable work to the dentist.

*(End of First Installment)*

678 Massachusetts Avenue.

# A SIMPLIFIED INLAY TECHNIQUE USING A CENTRIFUGALLY PACKED AMALGAM DIE

J. D. SHRIBER, D.D.S.
Los Angeles

THE perfect inlay has not been made; however, I believe the debt of the dental profession to society should be concentrated more upon preventive measures than reparative ones if that is possible. If it is within the province of human application to prevent carious destruction of teeth, that, to my mind, is the "perfect" inlay; but since we are confronted today with the problem of rehabilitating teeth, the purpose of this article is to present to the members of the profession a simplified technique on the construction of a gold restoration.

There still seems to be a definite need for a technique in the construction of the gold inlay whereby the average practitioner may produce a restoration at a saving both to himself and to his patient. Time is the essential factor entering into the cost to the patient, and this method I feel will cut from one-third to one-half the time usually spent on inlays. It therefore enables the operator to reduce his fees despite the increased cost of gold.

There are two types of inlays, which may be described with two simple words: good and bad. The value of good inlays can in no manner be measured by dollars and cents but by the satisfaction that lies in one's ability to create in metal that which has been destroyed by caries. The bad inlays, however, present an altogether different picture: short margins, either gingivally or occlusally; disregard of outline form, lack of contour, and last of all, the total disregard of anatomic markings. The so-called bad inlay, according to my observation, has been, for the most part, developed through the process known as the direct technique. In some cases, perhaps the majority, the operator alone has not been to blame.

We have been led to believe in the past that the so-called direct technique has been the only manner in which an accurately constructed inlay could be made. Perhaps in the hands of those few who have acquired the art of constructing the inlay in this way a beautiful one has been the result. It is obvious that the average practitioner is unable to produce a good inlay using a technique which, for the most part, is accomplished in areas permitting little ease of operation. The purpose of the method to be described is to incorporate the good points of both the direct and indirect techniques. I prefer to call this method a direct technique using a centrifugally packed amalgam die. It will be noted that the original wax impression remains unchanged throughout the entire procedure.

## Cavity Preparation

It must clearly be understood that this article concerns only the restoration of an individual tooth. Several ideas in cavity preparation have been presented heretofore, but the most adaptable and suitable method for this particular purpose is the modified Black's cavity preparation (Fig. 1); namely, slightly divergent axial, buccal, and lingual walls in their entirety, with especial emphasis on a flat gingival and buccal seat. It is my opinion that cutting instruments and not stones should be used for the most part in cavity preparation, particularly in the beveling of the enamel margins.

When caries is close to or approximating the pulp (determined previously by a roentgenologic diagnosis) I do not advise its removal at the first appointment.

Emphasis should be placed on a well-defined cavity outline, sufficient depth in the preparation being allowed for strength. The occluso-pulpal depth has been a contributing factor in the failure of apparently good inlays.

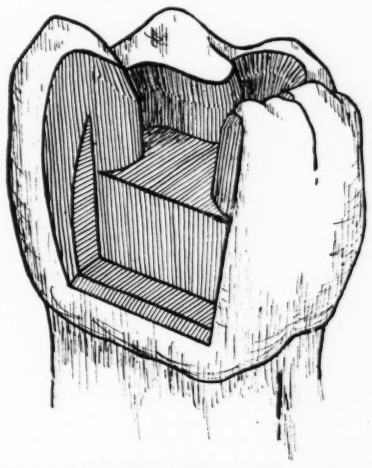

Fig. 1—Modified Black's cavity preparation.

## Impression

For the sake of brevity, let us select a mesio-occlusal cavity in the lower first molar. Before the impression is taken the cavity should be thoroughly phenolized to seal the tubuli.

1. A half-inch copper band is selected, preferably of the tempered type, and of a size that will allow the easy flow of wax. There should be a clearance on the gingival margin between the tooth and the band of at least a half millimeter.

2. On the distal aspect of the band, a V-shaped notch is cut which will allow the mesial portion to pass not more than 1 mm. below the gingival base of the preparation. Then the top portion of the band is cut so that it extends at least one-eighth inch above the tip of the cusp.

3. The band is contoured carefully to the lingual and buccal margins, just as in most direct methods. With an explorer scribe the buccal, lingual, and occlusal surfaces of the cavity on the inner side of the copper matrix (Fig. 2), and cut to approximately 1 mm. of the mark on the buccal and lingual margins (Fig. 3).

4. A piece of Kerr's blue wax, about three-fourths inch long, is softened at one end and forced into the mesial surface of the cavity and allowed to flow over the occlusal portion. It is essential that the entire matrix be filled with wax. Pressure is maintained until the wax is cooled at mouth temperature. The bulk of wax is chilled in the matrix with cold water and the excess trimmed away. This chilled bulk of wax permits the removal of the impression without distortion.

5. With a suitable instrument, scribe on the copper band, using the distal surface of the second bicuspid as a guide, the correct height of the mesial marginal ridge of the finished inlay (Fig. 4). Also note the exact location of the contact point and make a suitable marking on the matrix. A point to remember is that the more posterior the tooth, the nearer the

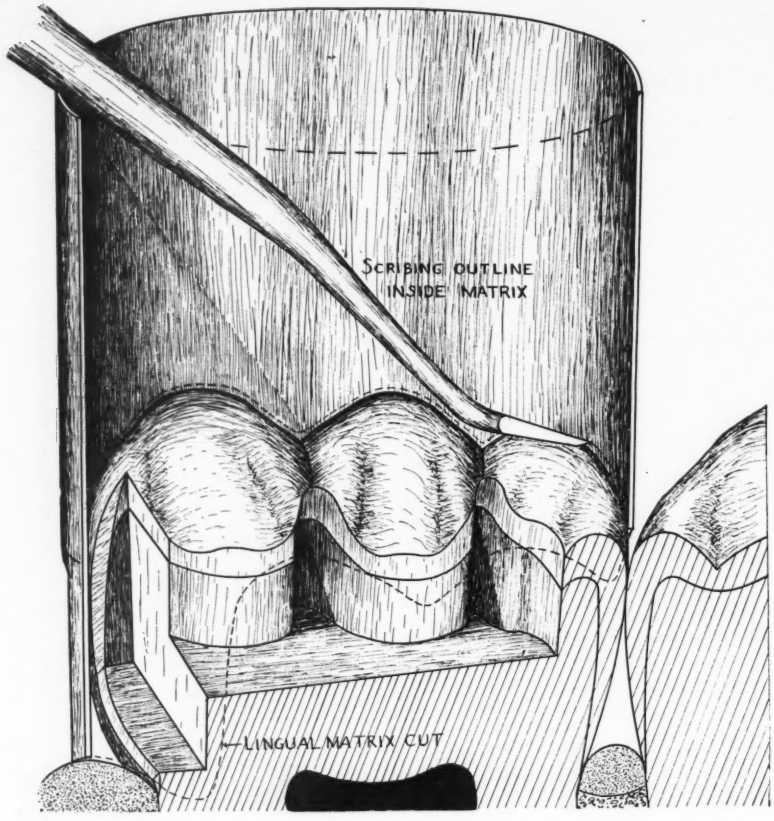


Fig. 2—Buccal, lingual, and occlusal surfaces of cavity scribed on inner side of copper matrix.

contact point approaches the lingual. If, during the removal of the impression, considerable resistance is encountered, the impression is checked for undercuts and the cavity preparation corrected. The impression should withdraw easily from a properly prepared cavity.

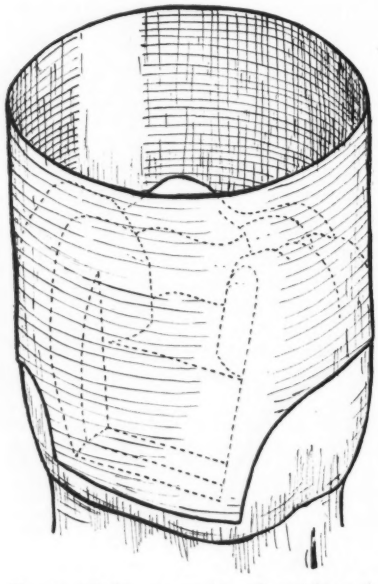

Fig. 3—Matrix cut on buccal and lingual margins.

### Construction of the Die

In preparing the die for the reception of the amalgam, one of the following two methods may be employed: (1) Wrap at least three thicknesses of half-inch adhesive tape around the band (from which all excess of wax has been trimmed), allowing it to extend at least one-eighth inch above the gingival portion of the impression (Fig. 5). (2) Two thicknesses of gummed paper or passe partout are wrapped around the band, which should likewise be extended at least one-eighth inch above the gingival aspect of the wax impression. A mix of plaster of Paris is spread on another piece of paper, sufficient length being allowed to wrap it quickly around the matrix (Fig. 6). The first method is just as suitable as the latter and should dispell all fear of any distortion occurring in the impression.

There are only one or two model alloys on the market that will faithfully reproduce an accurate die with a minimum amount of shrinkage. Most inlay waxes when allowed to cool to room temperature shrink 0.5 per cent. There is available on the market at present a quick setting alloy which has an expansion of .03 per cent, thus reproducing perfectly the exact size of the wax impression.

1. The mortar is filled approximately half full of a 10 per cent solution of hydrochloric acid. A sufficient amount of mercury is added and into this mixture the alloy shavings or grindings are introduced until the proper consistency is obtained. In other words, the alloy should be just slightly crepitant or, as it is sometimes called, a "sloppy mix."

2. Small pieces, about the size of apple seeds, are then jarred into the impression by tapping on the bench. The pieces are always inserted in the same side of the impression and the amalgam is allowed to flow into the crevices to exclude air bubbles.

3. The die is placed in the cup of the appliance (Fig. 7) which I have designed for this purpose and balanced by adjusting the movable weight on the opposite end. Tighten the apparatus on the motor. By the aid of centrifugal force, the excess mercury is expressed from the amalgam and condensation takes place. In the summer, when the thermometer is above 85°, moisten a piece of cot-

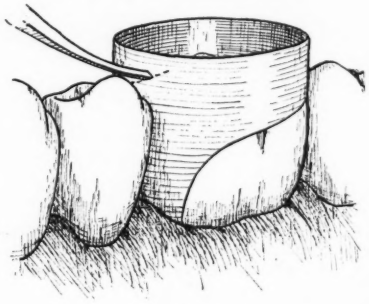

Fig. 4—Correct height of the mesial marginal ridge of finished inlay.

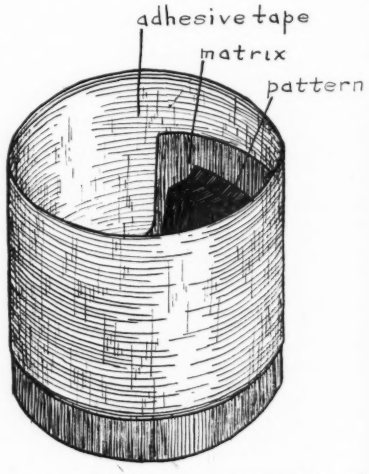


Fig. 5—Adhesive tape wrapped around band to extend one-eighth inch above gingival portion of impression.

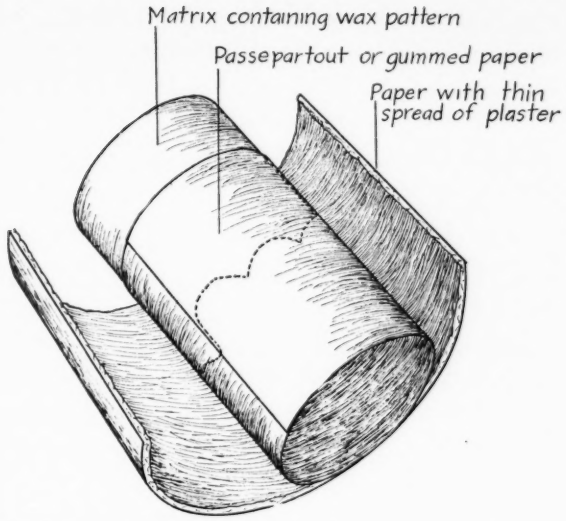


Fig. 6—Paper with spread of plaster to be wrapped around matrix.

ton with either ethyl chloride or cold water and place it in the cup on the perforated plate before placing the die therein. Wax above 85° will have a tendency to become distorted.

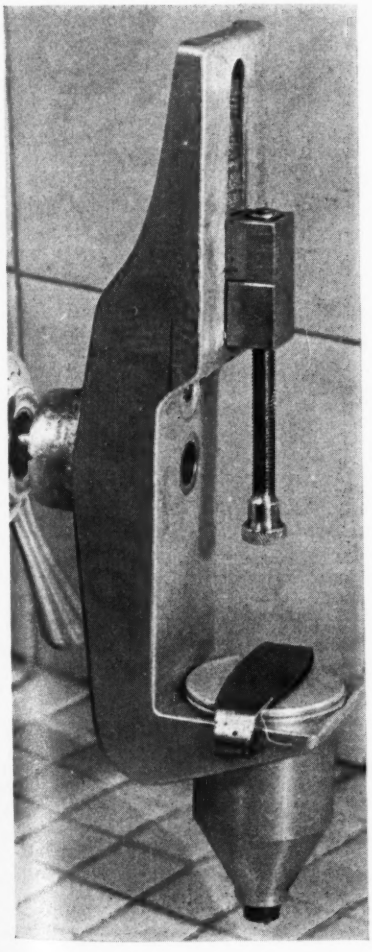

Fig. 7—Die placed in cup of appliance.

Owing to the varying speeds of the different motors the time taken to express the excess mercury completely from the die ranges from one to ten minutes. At 3000 revolutions per minute the time consumed in spinning is approximately two minutes. At this speed a constant gravitational pressure of 64 pounds is exerted on the amalgam, if the die weighs 1 ounce. This produces a die from which much more mercury has been expressed than could possibly have been accomplished by the hand-packed method.

4. When removing the spun die from the cup, care must be taken to prevent any expressed mercury from coming into contact with it, or failure will result. In case this does happen, however, replace the die in the cup and spin it again. It will be surprising to note how much mercury has been caught in the trap at the base of the cup. This mercury can be used again.

Most model alloys obtain their hardness in from one to four or five hours, depending, of course, on the type used, whether slow or quick-setting. It is advisable to remove the wax pattern from the die before the final setting period has taken place. Separate and set the die aside until it has attained its maximum degree of hardness. Then lubricate the die with K. Y. Jelly and carefully replace the original wax impression upon it.

5. With a number one-half round bur, make a hole through the copper band at the point at which the height of the marginal ridge has been previously determined. A slight indentation is made in the wax underneath. Cut the band on the buccal or lingual aspect and remove carefully. Carve the wax impression on the hardened amalgam die to anatomic form, using the slight indentation as a guide to the height of the marginal ridge.

6. Insert the sprue former at the previously determined contact point at an angle of 45° to the occlusal surface of the wax pattern (Fig. 8). Obviously, this will prevent the trapping of any air bubbles about the pattern.

7. I believe the quickest and most efficient method of investing to be one in which the investment has been mixed by mechanical spatulation. The pattern is first painted, the excess mix being blown off, and then, with the aid of a motor the investment is slowly vibrated into the ring.

8. After casting is done, the sprue is cut off and ground to within a half millimeter of its attachment to the inlay. If the band has been properly contoured to the adjacent tooth at the time the impression was made, a discrepancy of .005 mm. will occur. Consequently, cutting the sprue to within a half millimeter of the attachment will allow ample space to restore the contact point accurately.

9. The inlay is then tried in the tooth and corrected for occlusion with the aid of articulation paper. If, during the carving of the wax pattern, care has been taken in establishing the

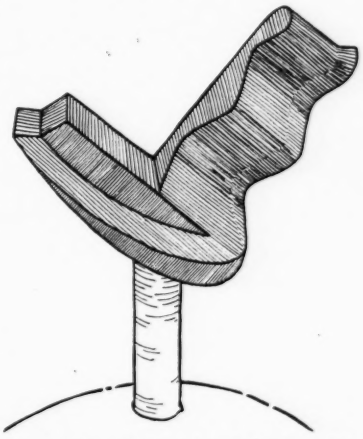

Fig. 8—Sprue former inserted at contact point at angle of 45° to the occlusal surface of wax pattern.

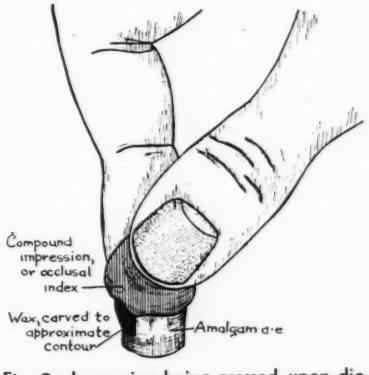


Fig. 9—Impression being pressed upon die to reproduce natural anatomy of tooth.

true inclination of the facets and the carving of the previously determined height of the marginal ridge, little grinding will be necessary to obtain the proper occlusal relationship.

10. After having been corrected, the inlay may either be finished on the die or the tooth to establish the true marginal relationship. Final polishing is accomplished by the aid of the lathe, which, to my mind, is far more efficient than by attempting to do this in the mouth at a second sitting. The heat generated from polishing with the lathe will not cause the inlay to be contaminated with mercury owing to the extreme dryness of the spun die.

11. Just prior to final cementation, any remaining decay is spooned out, the cavity sterilized with 95 per cent phenol, and a suitable cavity lining inserted. By filling the cavity in its entirety with cement, the inlay, as it is seated, automatically establishes a cement base.

6619 South Normandie Avenue.

### Reproduction of Anatomic Features of Tooth

Somehow I have a feeling of reluctance to remove or destroy healthy enamel tissue without at least reproducing Nature's own handiwork with artificial substance. To those who wish to reproduce the natural anatomic features of a tooth, the following method is suggested:

This method is of particular value on simple Class II cavities.

Before any preparation is made, press a small amount of softened modeling compound or laboratory cement upon the occlusal surface of the tooth and trim the excess to the occlusal third. Later, after the wax pattern has been carved to approximate contour, soften or puddle the occlusal portion of the wax with a heated instrument, lubricate the compound impression or occlusal index, and press firmly upon the die (Fig. 9). Note that every peculiarity of the natural anatomy will be reproduced. Cast crowns or three-quarter crowns for bridge abutments should be made by the well-known indirect method of establishing the occlusal relationship; namely, a wax bite with plaster of Paris casts.

### Advantages of Technique

1. The manner of packing dies described here gives one a thoroughly condensed and workable die, and a more exact counterpart of the original wax impression than could possibly be accomplished by packing with instruments into the die.

2. The method presents all the advantages of the direct technique with none of the disadvantages of the indirect technique.

3. The cavosurface of the wax, or that portion which is in direct contact with the cavity walls, remains unchanged. We literally take the tooth out of the mouth to work upon it.

4. Manipulation is easy.

5. I believe that the time saved will enable the average practitioner to produce an inlay more economically than has heretofore been possible.

## ABOUT OUR CONTRIBUTORS

Harry Kazis received his D.M.D. in 1921 from Tufts Dental College in Massachusetts. Doctor Kazis has previously contributed to the dental literature and is at present preparing a textbook on the subject of porcelain jacket restorations, of which some of the Digest material, consisting of four articles, will be a part. He is a member of the Massachusetts Dental Society and Northeastern Dental Society. Doctor Kazis is a general practitioner specializing in extensive porcelain restorations.

J. Donald Shriber, D.D.S. (University of Denver and University of Southern California). Doctor Shriber is a member of the American Dental Association, Los Angeles County Dental Society, M. M. House Study Club, and Delta Sigma Delta. Doctor Shriber is a general practitioner.

John H. Nesson received his D.M.D. at the Harvard University Dental School in 1922. From 1930 to 1932 Doctor Nesson attended the Suffolk Law School which he left to engage in clinical and laboratory research in periodontia at the Harvard dental and medical schools. Doctor Nesson is a member of the American Dental Association and component societies; he has previously contributed to the dental literature, and he has a general practice, specializing in periodontia.

Samuel Harrison McAfee took his D.D.S. in 1898 at the Atlanta-Southern Dental College, Atlanta, Georgia. Doctor McAfee is a member of the American Dental Association, Louisiana State, First and Second Districts, and New Orleans Dental Societies. From 1910 to 1915 he was professor of operative dentistry in the dental department of Tulane University, and from 1915 to 1920 professor of operative dentistry and crown and bridgework at Loyola University, School of Dentistry. At present Doctor McAfee is emeritus professor of operative dentistry and crown and bridgework, Loyola University, and has a general practice.

Charles Maynard Woodward was graduated with the degree of D.D.S. from the University of Southern California College of Dentistry in 1918. Doctor Woodward is past president of Pasadena Dental Society, U. S. C. D. Alumni Association, Zeta Chapter Omicron Kappa Upsilon honorary fraternity, and Southern California Society of Exodontists and Oral Surgeons; he is a member of the A. D. A., chief of Staff Dental department of All Nations Clinic in Los Angeles, and member of the privileged staff of Pasadena Hospital. Doctor Woodward was a contributor to the old Dental Digest, to Oral Hygiene, and other dental journals. His article Basis of Extraction Problems With Suggested Instrumentation is scheduled for future publication in the Digest. Doctor Woodward's practice is at present limited to minor oral surgery and exodontia.

# WHAT THE DENTIST SHOULD KNOW ABOUT THE LAW

JOHN H. NESSON, D.M.D.

Boston

THE dental profession, in its relation with patients, is governed mainly by the laws relating to contracts and torts. Rarely do we hear of ethical practitioners who infringe on the criminal laws. Because the average layman has little knowledge of the law, and this includes the dentist, and because of the well-known legal maxim, "Ignorance of the law is no excuse," it is my purpose to cover some of the more important laws of contracts and torts so that the dentist may better be prepared to meet conditions in his practice as they exist today.

I will not attempt to go into the intricacies of legal procedure or try to give a course in law. My purpose is rather to give the dental practitioner such primary essentials of legal knowledge as to enable him to know his rights and, possibly, to avoid some of the pitfalls that surround him in the practice of dentistry.

In most of the dealings with his patients where any business is transacted, the dentist is governed by the laws of contracts. While there are many variations in the law in different jurisdictions, basically, the law of contracts is universal. I will attempt to point out such principles of law as are recognized by the courts of our several states. Legally, each state is sovereign, and a nation unto itself, capable of passing any law not in conflict with the federal laws or the United States Constitution.

Many legal authorities have given us various definitions of a contract. First, a contract is a business agreement between two or more parties of legal capacity, arising from mutual promises or an accepted promise, which legally imposes a binding obligation upon each party to the extent of the terms of the agreement.

A contract may be either expressed or implied. An expressed contract may be written or oral, and arises when one party makes a definite offer to pay for something, and the other party agrees to sell. For example:

A patient comes to you for services and requests an estimate of the cost for certain definite work. You quote the patient a definite sum, and he accepts your offer, either orally or in writing. Immediately a contract springs into existence. In most cases, an oral contract is just as legal as a written contract, but is more difficult to prove. For that reason, a lawyer puts everything in writing and has it signed, instead of trusting to the oral acceptance and honesty of the other party.

An implied contract arises in the absence of an expressed agreement from the acts of the parties; for example, a patient comes to your office to have certain services rendered. He does not inquire as to the cost, and you do not tell him in advance. The law will imply an agreement to pay a reasonable charge for the services rendered.

Basically, there are six essential elements that comprise a contract. We will discuss them briefly and illustrate their applications.

I. The parties must be of legal capacity. An infant or a person who has not reached majority cannot be bound under a contract, although he may hold you liable under *your* agreement. An insane person, or one under guardianship, is not legally bound under his contracts. In some jurisdictions, if you contract with an insane person, not knowing him to be insane, and have taken no undue advantage and deal fairly and honestly with him, the courts will declare it legal. In most jurisdictions, a drunken person who is so drunk as to be incapable of knowing what he is doing, is not liable under a contract, although if he is drunk and knows what he is doing, the contract will be binding.

II. There must be an offer and acceptance or a meeting of the minds. Many volumes have been written on this legal phase of contracts alone. It is evident to the rational mind that before a contract can spring into existence, there must be an understanding as to what one party is to receive and the other is to pay. The parties must agree as to the identity of the subject matter. For example:

A man offered to sell a house on Cross Street for $5000, and the buyer agreed, and a contract was signed. The seller owned a house on Cross Street in Somerville and another house on Cross Street in Boston, and he intended to sell the former property. The buyer thought he was purchasing the Boston property. The courts held that there was no valid contract, because there was no meeting of the minds.

III. The terms of the contract must be definite. If the terms are so ambiguous as to make it difficult or impossible for the courts to interpret them, the contract will not be enforced.

IV. There must be legal consideration, recognized by law as such. For example:

If you agree to render $100 services for $100, that is legal consideration. If you agree to do it for $1.00, that is legal consideration, for the court will not look into the *adequacy* of the consideration. However, if you agree to render $100 services for nothing, that contract cannot be enforced because there is *no consideration* on the patient's part. If a patient owes you money, and you make a blank promise not to sue him and later you change your mind and sue him, you can still recover, for there was no consideration on his part in return for your promise not to sue. Had he given some consideration, regardless how inadequate, that would be sufficiently binding to prevent you from recovering.

However, it is safer legally not to promise anything unless you intend to keep your promise, or the court may sometimes compel you to do so, even though originally you had no intention of doing it.

V. If any legal formalities are required, they must be met. Ordinarily, this is not of consequence to the dentist but may be applicable in some rarer instances. This rule may be applicable to the dentist in the case in which A requests services to be rendered to B with the understanding that if B doesn't pay the bill, A will. Such agreement, to be enforceable, must be in writing. However, if A requests the bill to be charged to his account, it need not be in writing in most jurisdictions.

VI. The object of the contract must be legal. In other words, a contract for an illegal object is not enforceable.

## Liabilities of Contractual Parties

Ordinarily, any person, not a minor or an insane person or one under guardianship, may make a contract. Under the old common law in England, a married woman could not make a contract, but today, she may contract the same as a man.

Although a minor's contract cannot be enforced, everyone is responsible for necessaries of life—everyone including minors, insane persons, drunken persons, and all others.

### Married Man's Liabilities

While a married man is not liable under contracts made by his wife before their marriage, he is responsible for the necessaries of life of his wife and minor children, whether he likes it or not. He cannot disclaim liability for such necessities in the absence of a court decree declaring that he is living apart from his wife for justifiable causes, or is legally divorced through the wife's misconduct.

The courts have declared that dentistry is a necessity of life. However, what are necessities of life depends on the circumstances of the individual, his social and financial standing in life, and other circumstances the courts will take into consideration. What might be necessities in one case would be considered luxuries in another and have to be determined in each particular case. Every married man is responsible for such necessities of life for his wife and children as food, clothing, shelter, and medical and dental care. The courts will not permit him to disclaim his liability for such necessities when he enters the marital state and assumes the obligations that go with marriage and the bringing of children into the world.

However, in rendering dental services to a married woman and her children, the dentist should bear certain facts in mind. While a man is liable for dentistry done for his wife and children, *in the absence of an expressed contract,* he will be liable only for *fair value* of such services as were absolutely necessary. What is fair value would be *determined* by the *court* and not by the dentist, although the dentist could testify as to the fair value. In arriving at the fair value of dental services rendered, the court would consider what other dentists in the same locality generally charge for similar services, the cost of labor and materials entering into the transaction, and the reasonable profit to which the dentist is entitled.

This brings us to a consideration of distinguishing between two sets of facts that will illustrate the underlying legal principles.

If Mr. or Mrs. Brown came to your office and agreed to have extensive dental restorations of the higher type done for $1000, they would be liable for the $1000, all else being equal. That would be an expressed contract, for they have a right to contract for anything they desire at any cost. However, if Mr. or Mrs. Brown came to your office for the same services and no agreement was reached as to the cost, but you told them how you planned to restore the missing teeth without discussing the cost, the patient would only be liable for the fair value to be determined by the court.

Therefore, if you are doing unusual dentistry or charging unusual fees, it will be to your legal advantage to have some written evidence of the contract, or at least some corroborative oral evidence.

On the question of a husband's liability for his wife's dentistry it does not follow that because dentistry is a necessity, and a husband is liable for his wife's necessities, that a dentist would be able to enforce payment for large or unusual fees for services rendered the wife of an ordinary man, in the absence of an expressed contract.

If Tom Smith is a working man, he would not be expected to provide his wife with expensive removable or porcelain bridgework, if vulcanite dentures would have been just as practical. However, if Tom Smith agreed with you to restore his wife's mouth for $1000, the court will not step in and say that it was too much money for a working man.

A man has a right to make any legal contract he sees fit and such contracts will be enforced by the court.

The practical conclusion to be drawn from these legal principles is that when a married woman comes to your office for services, it is always in your best interest to advise her husband. A typewritten letter should be sent with the contents varied to suit the individual case, and a carbon copy preserved for your files. You may enclose the original and a carbon copy with a space at the bottom for the husband's signature to the letter, which is legally, a written contract. However, if it would be too embarrassing to request the return of the signed copy, the next best thing to do is to state that unless you hear from him to the contrary, you will consider the terms acceptable and go ahead with the work. Two such forms are here suggested:

September 1, 1934

Mr. Thomas Smith
120 Main Street
Plainville, Mass.

Dear Sir:

Your wife, Mary Smith, presented herself at my office today for dental services. From a careful examination of her mouth, I find the following services will be necessary to restore her mouth to a healthy condition:

Complete x-ray examination, study models, and diagnosis
6 Amalgam fillings
4 Synthetic porcelain fillings
5 Extractions
2 Three-tooth bridges
Prophylaxis treatments
Postoperative care and such other incidental treatments of individual teeth as may be necessary to render them fit for filling.

The entire cost of these services will be $350, payable as follows: $150 when services begin; $150 on .....; and the balance of $50.00 on completion of the services.

If this arrangement is satisfactory to you, will you please sign and return this letter and keep the enclosed copy for your records.

Very truly yours,

If the husband's signature is not desired, substitute the following paragraph:

If this agreement is satisfactory to you, I shall be pleased to go ahead with this work. Unless I hear from you before Mrs. Smith's next appointment on _____, I shall consider the arrangement satisfactory to you.

In the first instance in which Mr. Smith signs the letter and returns it to you, he would have a difficult time to convince a judge or a jury that it was not his legal contract. In the second instance, in which you did not request his signature, the court would consider it his duty to reply, either accepting or rejecting your terms. He would not be permitted to evade responsibility by failing to reply, knowing that you planned to render his wife those services.

The same principle should guide the dentist in rendering services to children. It is always safest and for the best legal and financial interests of the dentist to notify the person he expects to pay the bill before the services are rendered, rather than to try to collect later.

### Courtroom Behavior

Never argue with the judge. He may punish you for contempt of court from which there is no appeal.

Do not argue with the opposing lawyers. In every instance the odds are against you.

Do not try to tell the court what you think or believe unless you are giving an opinion as a qualified expert in a special field.

Do not try to tell what Mrs. Smith told you Mrs. Wood said or did. Hearsay evidence is not admissible.

Try not to answer "yes" or "no" to an unfair question. If the lawyer asks, "Have you stopped beating your wife, answer yes or no?" You may reply, "I have never beaten my wife."

Do not answer the questions of a hostile attorney too quickly nor anticipate his questions. Give your lawyer a chance to object to the question if it is objectionable.

Never deny that you discussed the case with your attorney before you came to court. The court knows you did.

Do not deny you are being paid as an expert witness if you are being paid. You have a right to be paid for your services, whether in court or in your office.

Do not exaggerate or show obvious partisanship or your testimony will be discounted. Try to tell the truth.

If you do not know the answer to a doubtful question, say so. If you guess, your reply will trip you later.

Have no fear of being badgered or bullied. Stick to the truth, and you will not have to cover up the lies or be trapped in doing so.

If the parents are divorced, more legal technicalities arise to stand in the way of the dentist collecting his fee. In any event, if he will obtain the husband's permission to render the services at his expense, he may save himself later grief. Ordinarily, if the parents are divorced and the husband is paying for the maintenance of the wife and children, he is liable for dental services unless he has made *provisions for them elsewhere.*

In a Massachusetts case a physician sued a divorced man for a tonsillectomy performed on his minor child at the mother's request. In defense, the father proved that he had made provision for medical services for the child with his physician, but that the mother took the child to her physician, the plaintiff. The court held he could not recover his fee from the father.

In a similar case, a divorced mother took her son to a clothier and purchased a complete wardrobe for the boy. The father refused to pay and suit was brought. In his defense, the father proved that he made provision for the boy's clothing needs at a large department store where he had a charge account. In this case also the plaintiff could not recover from the father.

For the dentist who renders services to a minor and looks to him for payment, it is well to emphasize, that while a minor can repudiate any contract he makes, even for necessaries, the minor is liable for the fair value of the services rendered and no more.

For example, if a minor agrees to pay $100 for a suit of clothes and the fair value is $25.00, the tailor can only recover $25.00. On the other hand if the minor contracts to pay $25.00 for a suit of clothes worth $100, he can enforce the contract as against the tailor.

It can readily be seen that if one has to go to court to collect a bill, it will be much easier if he can prove an *agreement* as to the cost of the services, rather than to leave it to the judge or jury to decide. The court may not be quite as advanced on dental economics as the dentist himself.

In neighborhood practices, mothers often send their children to the dentist with a maid or by themselves with oral instructions to do whatever is necessary for the child's teeth. When the bill is rendered, the charges are either outrageously high, or the work is not authorized, or many other lame excuses are created in the parents' minds for not paying the bill or for keeping the dentist waiting eternally for his money. Neal O'Hara, Boston newspaper columnist, wrote recently, "There are 67,000 dentists in this country, which represents a lot of poor suffering souls to whom most of us owe money."

Despite the married man's liability for necessaries, a married woman may contract to pay such bills. If a married woman wishes expressly to bind herself to pay for services rendered to her or other members of her family, she may do so. In such a case, one would look to her to pay the bill and not to her husband. If she is wealthy in her own right and her husband's ability to pay is questionable, it would be advisable to let her assume the bill, as the chances of collecting would be better.

In some states husband and wife are jointly liable for necessaries furnished the family, so that both could be sued.

If, as dentists, we will remember, that according to a survey made by the Harvard Business School of Administration, 35 per cent of patients who go to the dentist for services, *never* pay their bills, we will gradually learn that it is far better to take precautions before the services are rendered than to waste our time in court trying to collect. Wherever and whenever credit is extended, there are bound to be some losses. No one who extends credit collects his bills 100 per cent, but if we will take reasonable steps to prevent losses, we will not have to send good money after bad in trying to recover those losses. There are crooked persons who come to your office who know all the "ropes" of the game and will defeat you every time, as they have done many others, if you are not prepared for them.

## Breach of Contract

Often the dentist finds it necessary to sue for his fee for some dental appliance which the patient agreed to have made for him and later changed his mind and left the bridge or denture on the dentist's shelf. If this came about through the patient's fault, the dentist can sue for breach of contract and recover. The law justly states that in cases of a breach of contract, the party at fault must pay damages if the other party has done everything in his power to complete the contract.

This applies particularly to dentistry, for it is evident that a denture or bridge constructed for a patient would fit only that patient's mouth and no other mouth in the world. Therefore, if the patient changes his mind about having the bridge or denture inserted and the appliance was completed, the dentist may recover the full value even though the patient does not receive the appliance.

However, if a situation arises in which a patient agreed to have a prosthetic appliance constructed, and after the dentist had only half completed the work the patient changed his mind, the dentist would have no legal right to go ahead and complete the work and add to the damages already accrued. While the courts will protect the innocent party in a case of breach of contract, it will not permit him to add to the damages, but allow him only such damages as he suffered at the time the breach occurred.

## Broken Appointments

On the matter of broken appointments, the courts have ruled that a dentist is legally entitled to charge for and recover on a patient's broken appointments. Here is what a judge in Boston said in open court on the matter of broken appointments:

We now come to the charge of $51.00 for seventeen broken appointments. Every one knows that when a patient makes an appointment with a dentist, the dentist reserves that time exclusively for that patient, and if the patient breaks the appointment, it is only fair that the dentist should make a charge. Usually, dentists do not charge their earning capacity for the time lost, but they make, and are entitled to, a reasonable charge. I, myself, have paid for many broken appointments. The plaintiff is entitled to recover on this count as well as for the balance due for services.

In another case before the same learned jurist, the following were the facts involved:

The patient, a married woman, Mrs. A., was referred to Dr. B., the plaintiff, for dental services. He rendered certain operative services to her to prepare her mouth for upper and lower partial gold dentures. She also brought her two minor children for services, and after investigating Mr. A's financial status, Dr. B. extended credit to Mr. A. For two or three months prior to the construction of the dentures, Dr. B. sent Mr. A. monthly statements, and those bills were promptly paid.

When Mrs. A's mouth was ready for the partial dentures, Dr. B. told her they would cost $300. She said she would talk it over with her husband, and if it was agreeable to him, she would have impressions taken and the dentures made. A few days later, she returned to Dr. B. for impressions, saying her husband was satisfied with the charge. Impressions were taken and after the models were poured and set up, Dr. B. decided to complete the lower case first, and then construct the upper to fit the lower. Mrs. A. returned for two or three more appointments, and the teeth were set up ready for final trial before completing the lower denture. After that Mrs. A. changed her mind and decided she wouldn't have the work done. Dr. B. advised her that the lower was practically completed, and she would have to pay for it in any event. After several months of unsuccessful courteous efforts on the part of Dr. B. to persuade Mrs. A. to come in to have the lower denture completed, he was obliged to bring suit against Mr. A. for breach of contract. Dr. B. testified in reply to Mrs. A's attorney's questioning that a dental laboratory cast the denture and did other work on it that cost him $90.00. Mr. A. introduced a witness employed by another dental laboratory who testified he could construct such a denture for $35.00. After hearing all the evidence, the judge announced his decision thus: "It was wrong of Mrs. A. to leave the denture on Dr.

(*Continued on page* 317)

# HOW A DENTIST MAY MAKE HIS OWN CLINICAL MOTION PICTURES

S. H. McAFEE, D.D.S.
New Orleans

WITH comparatively simple equipment a dentist may make his own clinical motion pictures at his operating chair and in his laboratory. A great deal of skill in movie making is not essential if he will profit by the experience of others and follow a few fundamentals of a fairly definite technique; otherwise he may learn only by the rather circuitous route of trial and error.

Either standard (32 mm.) professional equipment and film may be used or the much more convenient and less expensive 16 mm., "amateur size," may be used. Excellent pictures, clearly visible to large audiences, are being made and projected with the latter. Marked improvement has been and is being made in 16 mm. equipment and pictures. Cameras, projectors, and accessories almost the equal of the big professional 32's are now available: sound-on-film, natural colors, various professional camera effects—almost everything.

A clinical motion picture presents many advantages: First, it makes a permanent visual record of an operation. The picture of the operation may be repeated at will, viewed by thousands, now or later; whereas that actual operation can be seen by only a few, and then only once. It is surprising that wider use is not being made of the great educational possibilities of the motion picture in dental offices, clinics, society meetings, and in dental teaching. The motion picture can often clearly and concisely convey, in a few minutes, information impossible to impart verbally.

The small 16 mm. equipment throughout is comparatively simple, easily understood and operated, and is as safe from danger and restriction as an electric fan.

Some essentials to successful filming of operations in the mouth are: (1) a good movie camera; (2) a good 3 or 4 inch focusing mount telephoto lens. (A 1 or 2 inch focusing mount lens is useful for wide shots but not essential); (3) an alinement gauge, or its equivalent, for centering; (4) a steady, pan-head tripod; (5) a strong, focusing, incandescent spotlight. (Some auxiliary lights, such as one or two incandescent photo-flood bulbs may be necessary for general or wide shots.)

1. *Movie Camera*—Personally I have been using for years a Filmo DA, spring driven camera. It has never given me any trouble. This camera has a turret head for three lenses, a built-in critical focuser, seven speeds, variable view finder, and many other desirable features. The turret (revolving) head and critical focuser permits sharp focusing of the lenses on the actual scene, rotating them at will to finder, focusing, and filming positions. One is not concerned with measuring camera focal distance with the critical focuser.

2. *Telephoto Lens*—The telephoto lens makes it possible to place the camera at a distance of 7 or 8 feet, out of the way, and get a greatly magnified "closeup" of the immediate field of operation. I would say the telephoto lens and the spotlight form the key to success.

I use a 3¾ inch, f 3.3 focusing mount telephoto lens for the actual operating scenes in the mouth and a 1 inch focusing lens for wider or general shots. The 1 inch lens, fixed mount is the one commonly included with small movie cameras. This work cannot be done satisfactorily with only a 1 inch lens.

At 7 or 8 feet camera distance any good 3, 4, or 5 inch telephoto lens makes the patient's face just about fill the screen when the picture is projected. Of course this greatly magnifies the operation. If all is well done, the minutest detail—even a suture—can be seen from a great distance if shown with a good strongly illuminated, 16 mm. movie projector. The size of the screened picture however, may be anything from 3 by 4 inches to 9 by 12 feet or more—limited only by the power of the projector and the screen distance available. Most theater screens, for instance, average about 9 by 12 feet.

3. *Alinement Gauge*—The alinement gauge is a small sliding accessory placed between the tripod head and the camera. It has three positions: view finding, critical focusing, and filming. It makes framing or centering the picture *on the film* an easy and accurate procedure. The lens does not "see" the area to be filmed just as one sees it in the view finder. The lens "sees" it from a point about 1¼ inches to the side, above or below, depending on the make of the camera. In closeup work, especially when a telephoto lens is used, some provision must be made to compensate for this or the picture will be "off center" on the film. There are many ways of doing this, perhaps as many as there are different types of cameras and accessories. For this reason I say an alinement gauge or its equivalent is an essential. One method is to set up an imaginary center on the scene. For the inexperienced this is unreliable.

4. *Tripod*—A tripod is desirable. A pan-head (adjustable to any position) greatly facilitates correctly positioning the camera, which should be stone steady while filming; otherwise the picture will jiggle all over the screen, especially with a telephoto lens.

5. *Spotlight*—The fifth essential I would say is a strong, focusing spotlight. I use the Eastman 500 Watt incandescent, water-cooled medical spotlight. It gives a strong, sharp beam, and, at 7 or 8 feet, lights up the face and practically everything inside of the mouth, giving sharp definition. The circular spot of light, from 7 or 8 feet, is about 12 inches in diameter. This light requires no attention in operation and gives no uncomfortable heat, takes ordinary house A.C. or D.C. current and is safe and fool proof. No other source of light is necessary for the telephoto lens, which, with supersensitive film, will require from f5 to f8 lens opening at normal (16) camera speed.

For wider shots, with a 1 or 2 inch lens, one or more simple photo-flood bulbs may be necessary. They cost a few cents. They give an intense photographic light. All kinds of inexpensive special and adjustable stands with reflectors may be had for them or they may be screwed into ordinary room light sockets, if favorably located, or used in portable floor or desk lamps.

I use supersensitive panchromatic film for all work, indoors or out, ex-

cept for titles, drawings, and the like. The cost of the film includes developing by the film manufacturer's laboratory, either by the reversal process or the negative-positive print method. The manufacturers have machines that do this. Some of these machines have a photo-electric cell "eye" which automatically and beautifully controls the film's development. It will correct your exposures within a rather wide range, thus eliminating much human error, although good filming should not require it to do so.

I use a photometer for determining the correct exposure. Briefly, it is a small inexpensive instrument which is pointed at the scene. You press a button and read on a dial the correct lens diaphram opening, or exposure. It works for all possible lighting conditions, indoors or out, and sometimes says, "you cannot take a picture with this light."

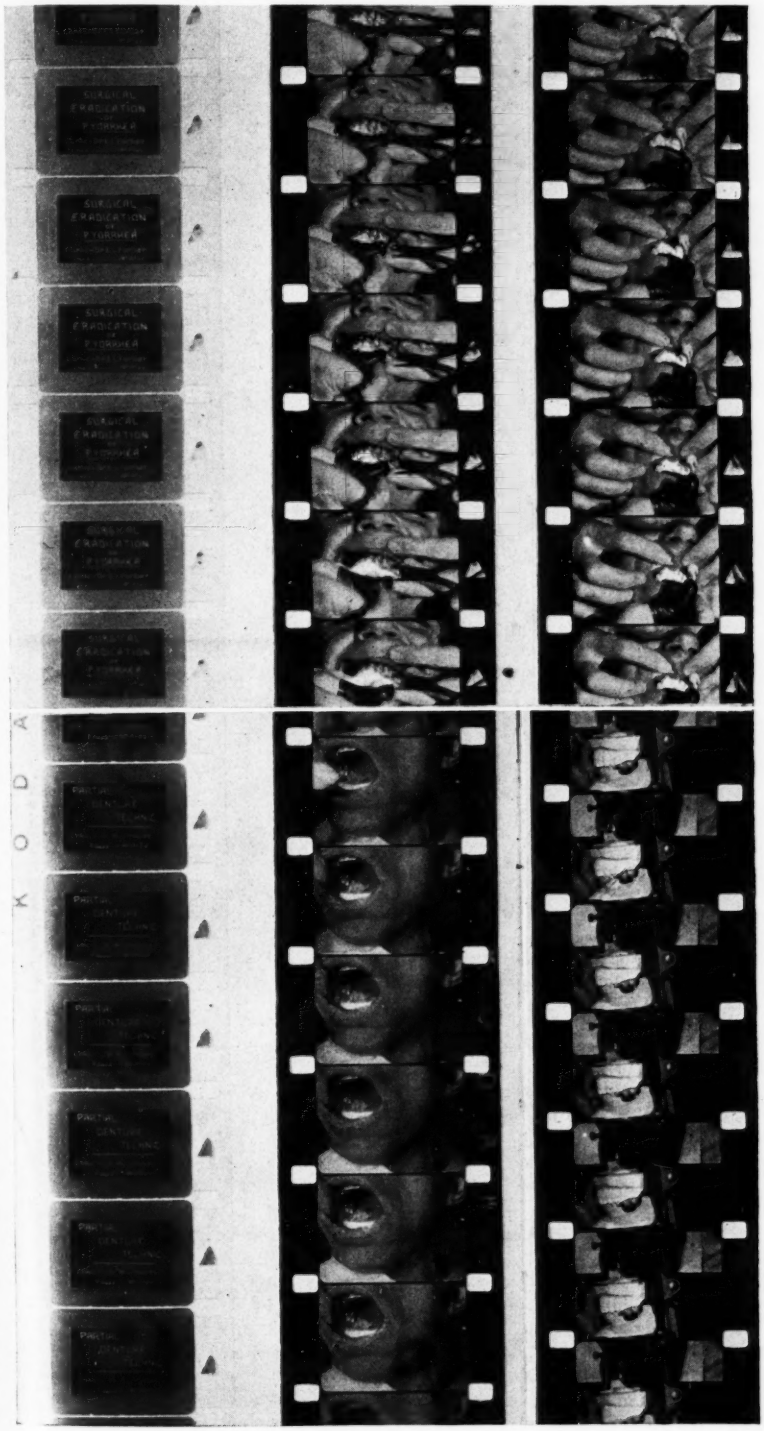

Fig. 1—Sections of 16 mm. films cut from clinical pictures.

Before a film is begun it is well to make up an outline, a "scenario," if you please, of what you wish to show and how. It is neither necessary nor desirable to show everything from the time you leave home in the morning until the patient goes to bed that night, although this seems to be the policy of some of the theatrical movie makers. And it is not essential to film scenes in the exact sequence in which you wish them to appear on the screen. You may film the first scene last, the last scene, first, or in any order that is most convenient. Filming them in their exact screen sequence saves only some cutting and splicing. This is taken care of during the editing, or cutting and putting together of the film. The different "shots" may be cut, spliced, and screened in any order desired. In the professional thrillers, they often hang the culprit first, film him committing the crime next, and catch him afterward. Sometimes the hero marries the girl first and is introduced to her later in the filming.

If you wish to use titles (descriptive reading matter) you may print, write, letter, set-up, draw, or otherwise prepare and film these yourself, if you wish. There are many outfits for sale for this purpose. I have tried many and like none. This work is inexpensively and beautifully done by the many movie laboratories. It is one of the most difficult phases of movie making for the amateur. Given proper instructions the movie laboratory will do this for a nominal fee; also the editing and splicing of the films. I do all of mine, but I do not believe I would elect to learn how again, although it is an interesting and fascinating pastime. I would advise the beginner to learn how to *take* good pictures first and let the laboratory do the rest.

Sound-on-film (talkies) and films in colors, are, in my present opinion not so applicable or even desirable in clinical films of the type under discussion. While entirely practicable and more spectacular they are necessarily more complicated and expensive to produce and show.

There are available several microphone-loud-speaker combinations that make it practicable and easy for one person, clinician - projectionist - sound technician, all in one, to give his show, talking in a low speaking voice to the microphone, saying what he

pleases as the picture proceeds on the screen. The voice can be amplified at will. With such an arrangement one can make any size audience hear perfectly. The sound-on-film talkie, used as such, cannot be varied according to the needs of the audience at hand, be it of freshmen students, old dentists, or perhaps laymen.

One combination is so portable that it may be easily carried by hand in its two small built-in cases. It is almost fool proof; it can be set up, the plug connected into an ordinary 110 volt lamp socket, and put in operation in a few minutes. It is entirely independent of the picture and projection equipment. It even has provision for introducing music of one's own selection, fading it in or out at the operator's discretion.

The illustrations (Fig. 1) of sections of 16 mm. films are actual film size photo-prints made from pieces cut from two clinical pictures I recently made—PARTIAL DENTURE TECHNIQUE, Doctor W. J. Healey, Clinician, and SURGICAL ERADICATION OF PYORRHEA, Doctor E. L. Fortier, Clinician. They were filmed in the respective offices of the clinicians. Of course, a photo-print from which a halftone cut is made and printed loses more or less detail, but with a magnifying glass one can perhaps get an idea of relative proportions.

Fig. 2 illustrates approximately the camera and spotlight set-up used in these pictures to which reference has been made. With everything all set and adjusted, the camera loaded and wound up, the clinician may proceed, giving the signals "shoot" and "stop" to the button pusher. Between shots the camera spring should be rewound to prevent running down during a scene. Frequent check-ups should be made to see that centering, lens setting, and so on, have not been disturbed. If so, they need readjustment. Certainly this must be done after every reloading of the camera. The film footage indicator should be watched when the roll in the camera is almost used up. One should not start a scene during which the film will run out unless he can take up the operation approximately at the point he left off, after reloading the camera. If this is too much trouble, one may get one of the new 1000 feet magazine cameras. They cost about $1000.

One hundred feet of 16 mm. film, at normal speed, gives about three and a quarter minutes of picture. A full standard 16 mm. projector 400 feet reel runs about fifteen minutes. Special projector equipment and reels up to 1200 feet are available. Two or more separate pictures, or single pictures of more than 400 feet, can be spliced together and the whole shown with these without the annoying interruption of changing reels. I use and prefer this method.

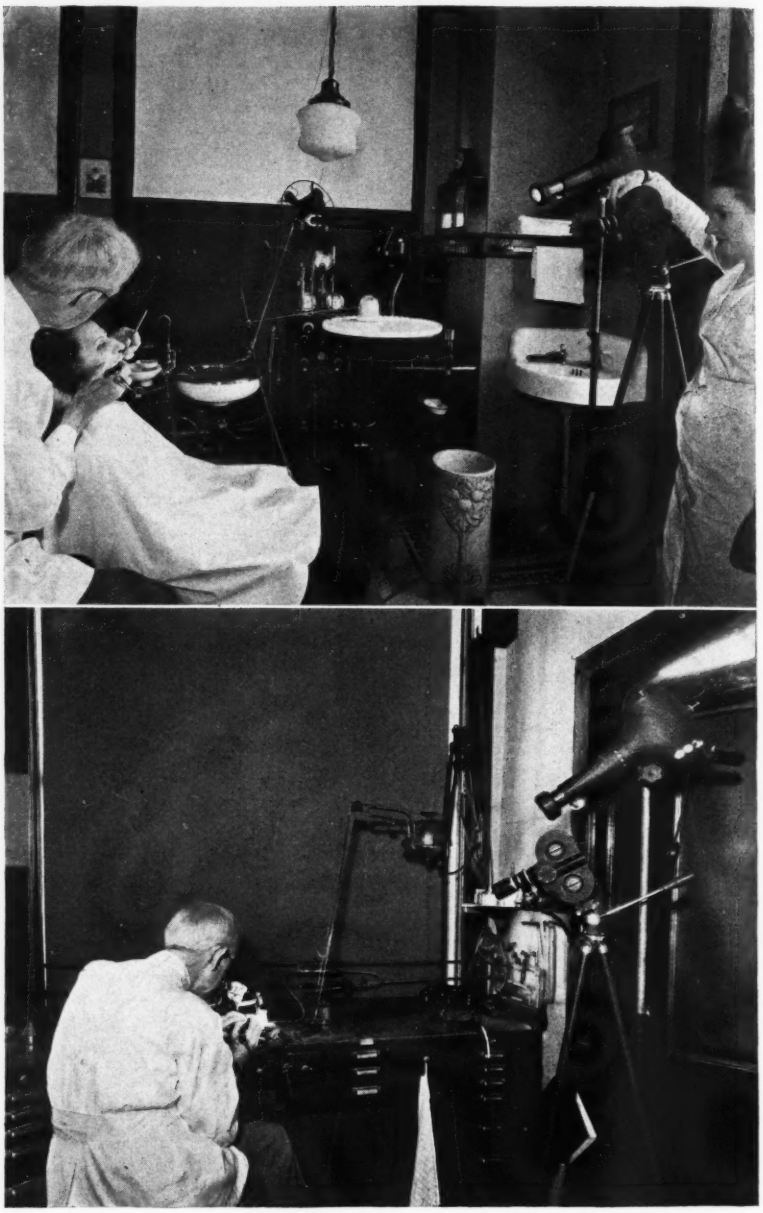

Fig. 2, top—Camera and spotlight set-up.
Fig. 3, bottom—Set-up used in laboratory to film casts, appliances, and technical procedure.

Fig. 3 approximately illustrates the set-up used in the laboratory to film casts, appliances, and technical procedures. The only environmental essentials are sufficient room and 110 volt current.

Fig. 4 illustrates a homemade assembly for greatly enlarging and filming single dental x-ray negatives by transillumination. One so filmed almost fills the projection screen.

The cost of movie cameras and equipment varies like the cost of watches, automobiles, hotel accommodations, and dental fees—and for the same reasons. Most of my equipment is Bell & Howell. There are other good makes. Starting from perhaps as low as $100, the sky is the limit. There are cameras and cameras; projectors and projectors; lenses and accessories, ad infinitum. There are lenses from a couple of glass buttons costing a few cents to fine and complicated lenses costing hundreds of dollars each. There are lenses from the common 1 inch

## AMERICAN SOCIETY OF CINEMATOGRAPHERS

MEDAL WINNERS: Announced in December, 1933, *American Cinematographer*: Amateur Competition International Class:

*Silver Medal* for Educational Picture: Doctor S. H. McAfee, New Orleans, Louisiana, for "Partial Denture." 1 reel.

"Dr. McAfee presented a technical subject in a manner that was interesting to the layman as well as the dentist. His photography was consistent and his continuity thorough."

HONORABLE MENTION: From *Movie Makers,* December, 1933:

"The ten best as chosen by the editorial staff: Surgical Eradication of Pyorrhea, a one reel dental film by Dr. S. H. McAfee, ACL, of New Orleans, because of the perfection of its closeups and because its content was made entirely clear by the careful use of models. In Surgical Eradication of Pyorrhea, Doctor S. H. McAfee, ACL, made use of a very fine closeup technique and, in presenting the preliminary clinical information, plaster models played an important part. The work was shown step by step so that certain points could be watched more closely later on. The very difficult problem of lighting oral surgery for good photography was well handled and the resulting exposure and definition were eminently satisfactory."

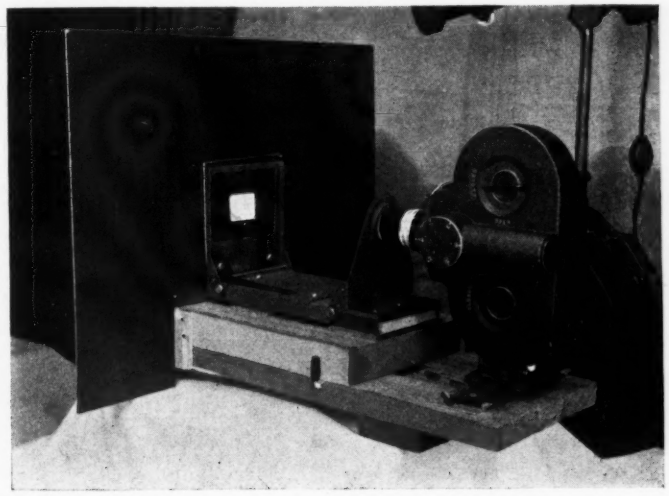

Fig. 4—Homemade assembly for greatly enlarging and filming single dental x-ray negatives by transillumination.

Fig. 4

1225 Maison Blanche Building.

(usually sold with small movie cameras) to telephotos perhaps 2 feet long; wide angle lenses, color lenses, and what not; fixed focus mounts, focusing mounts, universal focuses, modifiers, and fillers. One can acquire a trunk full of lenses, and a carload of gadgets and accessories. They all have their uses, special or otherwise. The limit is in direct proportion to one's bank account and the extent of one's interest. For the clinical filming described I find use for only two lenses: a good 1 inch focusing mount and a focusing mount telephoto. The only reason for a telephoto is to make closeups from a distance. If the camera is closer than about 7 feet from the operation, it is in the way. A good telephoto lens, therefore, a good spotlight, and an adequate camera distance are keys to the situation.

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# COLLODION AS A HEMOSTATIC

HERBERT H. GREENBERG, D.D.S., Annapolis, Maryland, suggests that collodion solution may be used in the mouth in the control of hemorrhage.

A woman, aged 60, presented for the extraction of an upper second molar. The blood pressure was high, about 190 systolic.

*Extraction*—The regular injection of procaine hydrochloride was used without epinephrine, and the tooth was removed in toto.

*Postoperative Course and Treatment*—Subsequent to the extraction the patient developed an arterial hemorrhage. As the use of epinephrine chloride was contraindicated because epinephrine is a vasoconstrictor and would increase the blood pressure, other methods had to be resorted to, to arrest the bleeding.

A strip of sterile gauze packing about one-fourth inch wide was saturated with tannic acid and glycerin and packed into the socket. This alone would not correct the bleeding; it was therefore necessary to place a piece of sterile absorbent cotton over the wound so that it would extend buccally as well as palatally. This cotton was saturated with collodion solution and allowed to dry. The bleeding was checked almost at once. The patient was given calcium lactate, also, 10 grains four times a day for forty-eight hours. The drain was then removed with no sign of recurrent hemorrhage.

*Conclusion*—The collodion hermetically seals the area and checks the flow of blood. Its use in the control of hemorrhage of the alveoli is beneficial and is recommended.

Lieutenant, Dental Corps, U.S.N.R.
54 West Street.

# REDUCTION OF FRACTURES BY USE OF SIMPLIFIED WIRING

C. MAYNARD WOODWARD, D.D.S.
Pasadena, California

IT IS said that Hippocrates used a form of interdental wiring of maxillary fractures. Since his time little by little certain improvements have been added. Doctor Henley Miller of San Francisco is credited with presenting perhaps the simplest refinement of them all, the split shot technique, but even he is not sure that someone else did not develop a similar method in another part of the country, simultaneously with him. Also, Blair, Ivy, Winter, Mead, Silverman, and others prominent in dental and oral surgical literature must be mentioned as originators of advances in wiring technique.

Physiologic conditions surrounding the reduction and healing of fractures of the bones of the jaws are the same as those found in the fractures of other bones but there are certain physical factors involved in handling fractures of the mandible and maxilla which make the problem of their reduction radically different from that of the other bones. Without a thorough knowledge and appreciation of these physical differences any attempt on the part of the operator to apply those principles of fracture reduction generally used for other bones to the problem of reduction of fractures of the maxilla and mandible will lead him into a maze of unnecessary difficulties. It may also cause him to construct clumsy and ludicrous appearing apparatus for his patient to wear. The use of such contrivances often leaves the patient in a worse condition than if there had been no mechanical intervention at all (Fig. 1).

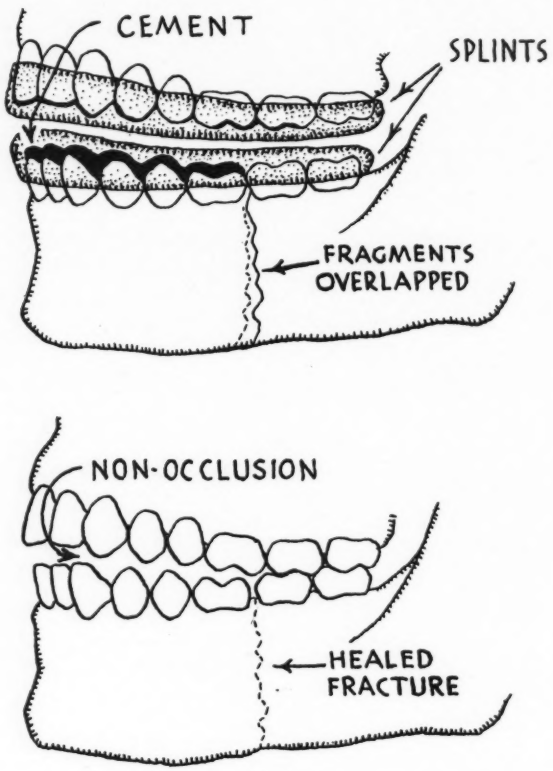


Fig. 1

Factors that cause fractures of other bones of the body to differ physically from fractures of the bones of the jaws are of two classes, those which serve as aids in reduction and treatment and those which serve as handicaps. Some of the physical handicaps to reduction of fractures of the mandible and maxilla are: (1) Bones of the jaws are frequently fractured so as to be compounded into habitually septic areas. (2) The mandible is so placed in reference to the larynx that in most cases submental splints of effective design cannot be used without serious interference with respiration. (3) There is greater necessity for precision in reduction of fragments of the mandible because even a slight alteration of occlusal relationships may cause grave dysfunction. On the other hand, an error of as much as one-fourth inch laterally in the reduction of a fracture of the shaft of a long bone would be considered a good result. (4) Reduction of fractures of the jaws under general anesthesia is difficult because of possibility of postoperative nausea. (5) Bones of the jaws must be repaired and yet at the same time the mouth must remain in partial function. The processes of eating and drinking must go on. There is no opportunity to put the face in a plaster cast and positively to immobilize it for weeks as in the case of a leg or an arm.

Because of these handicaps, it is imperative that a successful method of reduction be simple, that it must not take up a great amount of room, and must interfere as little as possible with the ordinary functions of the mouth. In cases in which it can be used the technique of intermaxillary-interdental wiring described in this article fulfills these conditions admirably.

Physical factors found in fractures of the jaws that aid in reduction are: (1) The mandible has modified hinge joints fixed to a rigid base at both ends of the the bone. (2) The strongest muscles attached to the mandible are so placed as to serve as partial splints (Fig. 2). (3) The muscular pull toward distortion in most cases is weak (Fig. 2). (4) The teeth being hard projections rigidly fastened to the bones are aids toward reduction found in no other bones. (5) The bones of the jaws seem to be

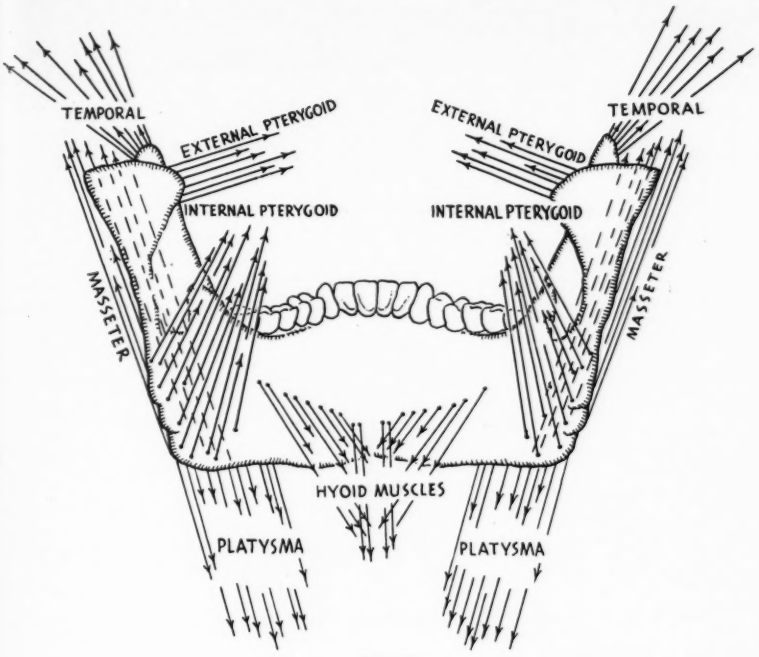


Fig. 2

more resistant to infection in compound fractures than other bones. The technique of interdental wiring admirably takes advantage of these aids to reduction.

Many complicated forms of dental splints have been advocated from time to time. Most of them were based on the premise that absolute immobility of fragments is possible of attainment and also highly desirable. Experience has shown that it is almost impossible to obtain absolute or even approximate immobility of the fragments of a fractured mandible in the living subject, and if it were possible its desirability is questionable. Occasionally fabricated splints may be necessary, such as in the case of fractures of the mandible in insane persons or in edentulous jaws. But such cases are rare.

### Impressions of Fractured Jaws

When splints are to be made, or in some complicated cases of interdental wiring with the use of heavy arch wires, it is necessary to take impressions of the jaws. It will be found advantageous in taking impressions of fractured jaws to use sectional trays and take impressions of the fragments separately (Fig. 3). If possible the impression material should be of the elastic type. An attempt to take a single impression of the whole fractured arch at one time will be found difficult and much more painful than the sectional method. After casts have been made from the separate impressions, these casts may be trimmed to fit together in proper position and made into one unit by the addition of plaster. Models of the jaws in fracture cases are used in order to study what the proper occlusion should be and for the purpose of forming arch wires when such appliances are necessary. The subject of heavy arch wires will be dealt with later.

Our chief interest is in simplified wiring and reduction, which can be used in so many of the fractures caused by fist fights, falls, and so on. The materials needed for this work are (1) dental floss; (2) several feet of stainless steel wire (.014 inch) cut into foot lengths; (3) two straight Kelly hemostats; (4) a pair of small crown shears; (5) some split B. B. shot or some 24 gauge impression tray metal, and (6) smallest orthodontia rubber bands.

### Split-Shot Technique

1. A loop of dental floss is engaged with a loop of the stainless steel wire. The floss is passed between the teeth and drawn around the tooth to be wired (Fig. 4). The wire loop is drawn through the interproximal embrasure.

2. The dental floss is then disengaged and one of the free ends of the wire is slipped through the loop. If split-shot are to be used the two ends of the wire are twisted together and the shot is clamped on the twisted portion. If the tray metal shield is to be used the two wire ends are passed through the holes in the tray metal before they are twisted. The tray metal shields are made by cutting a small rectangle of the metal and forming it into a concave shell. Two small holes are punched near the end with an explorer or other sharp instrument. The shell is placed on the

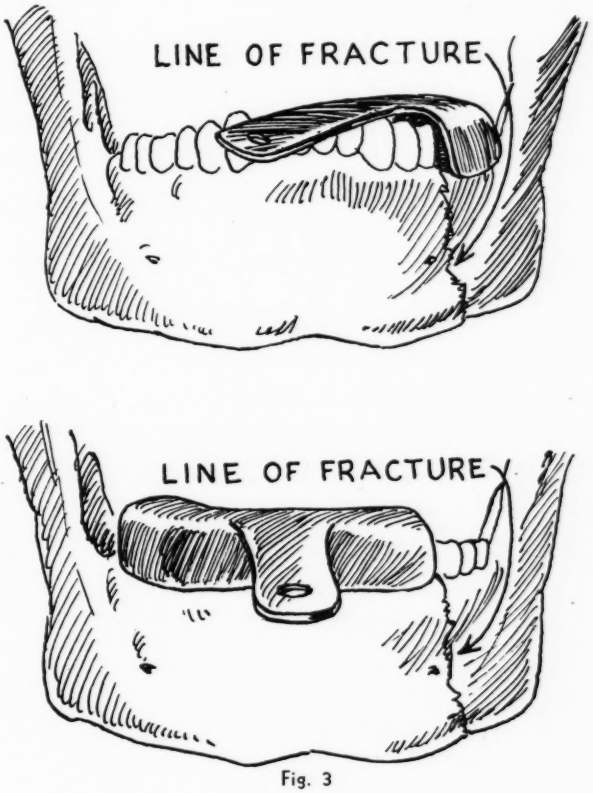


Fig. 3

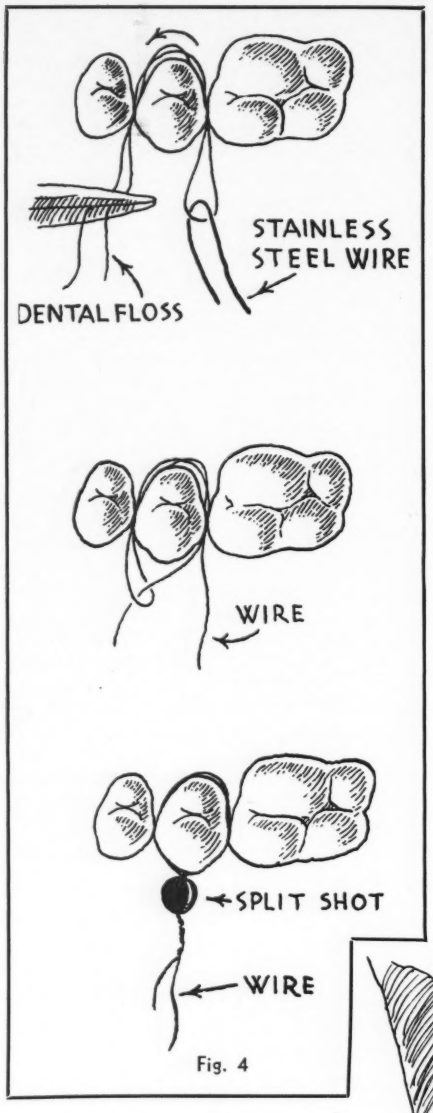


Fig. 4

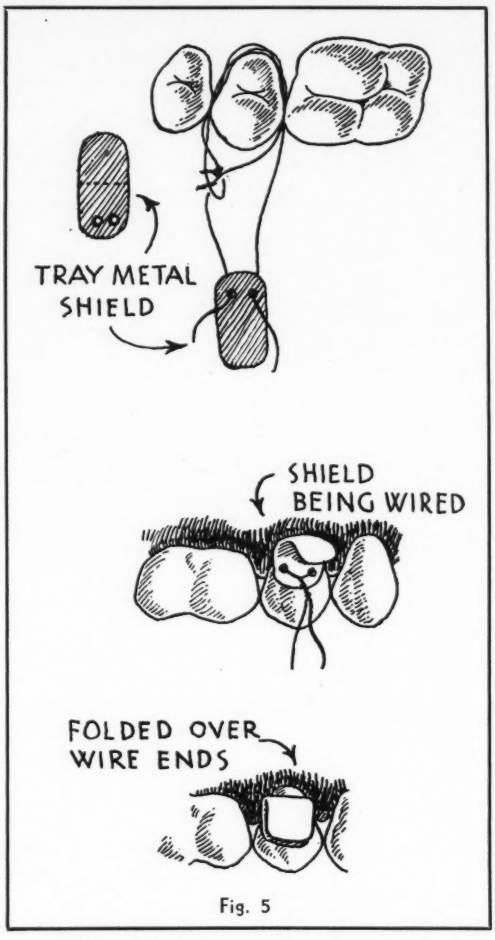


Fig. 5

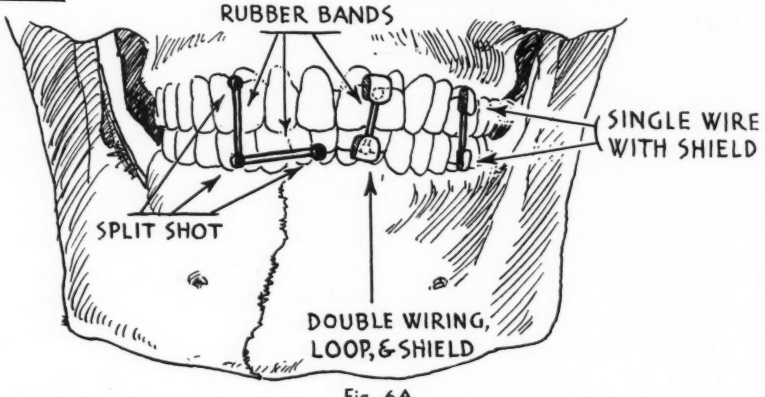


Fig. 6A

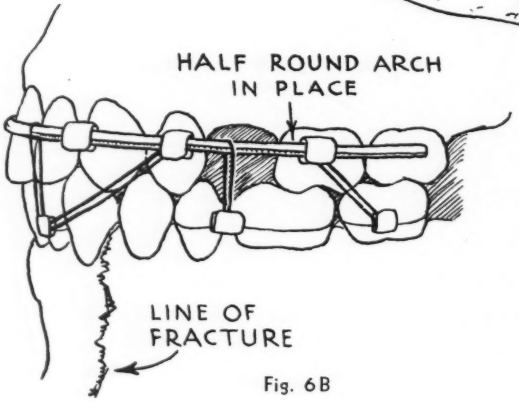


Fig. 6B

wires with the convex side toward the tooth. After the ends of the wires are twisted together the unpierced end of the shell is folded over the wire end to serve as a shield to protect the cheek (Fig. 5).

3. After a number of teeth have been wired in this manner in both arches, rubber bands are looped over either the shot or metal shields and extended to a tooth in the opposing jaw and looped over the projection of that tooth (Fig. 6 A). Thus con-

stant traction will be exerted to bring the misplaced fragment into its proper position.

4. A different wiring scheme is needed in cases in which the crowns of the teeth have not sufficient bell to hold the single wiring or in which a single tooth is not brased strongly enough to sustain the stress placed on it. In this method loops are made near each end of the wire and both wires are pushed through the protecting shield before they are threaded around the teeth. The two ends of the wire are led through the interproximal space between the two teeth to be wired, the ends are then separated on the lingual side of the teeth, and one of the ends is passed around the mesial tooth and one around the distal tooth of the pair to be wired. The wire ends are then drawn together on the buccal surface of the teeth. Meanwhile a loop has been twisted in the portion of wire projecting through the shield, and the free ends of wire are twisted firmly together on the occlusal side of that loop. This loop is to be used as an anchor for any traction or retention wire or rubber that may be used (Fig. 7).

5. In those cases in which teeth are missing their place may be taken by the use of heavy arch wires. These are made from 2 mm. German silver, half round wire. These heavy bars are formed to the shape of the arch (sometimes this shaping can be done without a cast, and in other cases, casts are necessary), and fastened to the necks of the teeth by the use of the dental wiring just described. All wire ends should be covered with the tray metal shields (Fig. 6, B).

6. The rubber bands which are used to bring the fragments in position may take from twenty-four to seventy-two hours to accomplish their purpose. This process is not excessively painful to the patient. The operator should not be too impatient. If after seventy-two hours there is not a definite movement toward correction, manual adjustment may be necessary. The rubber traction is usually to be relied on, however. After the fracture is correctly reduced the rubbers may be removed and wires substituted to retain the fragments in place. While the rubber bands are in use they should be changed at least every forty-eight hours as they lose their elasticity rapidly in the warmth and moisture of the mouth.

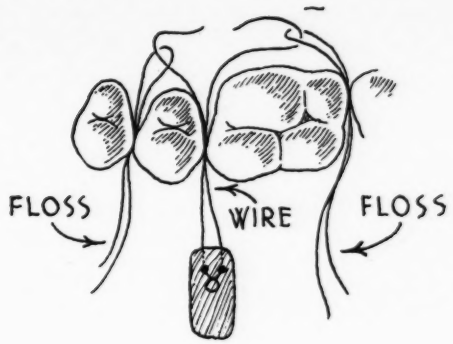


Fig. 7

634 First Trust Building.

## WHAT THE DENTIST SHOULD KNOW ABOUT THE LAW

(*Continued from page* 309)

B's hands, because her mouth was the only one in the world it would fit. She should have made an attempt to adjust the matter, which she failed to do. The denture was of no value to the dentist nor to any one else except Mrs. A.

As to the testimony of the witness that he could construct a similar piece of work for $35.00, what of it if he could? About thirty years ago, when I began to practice law a man came to me to draw up a contract. I charged him $10.00. He thought it couldn't be good if it only cost $10.00, so he went to a firm of attorneys who charged him $200. They did not overcharge him.

I go into Shreve, Crump & Low (a high-grade jeweller's concern in Boston) and buy a piece of jewelry for $100. Maybe I could buy a similar jewel for $50.00 in another store, but for the character of Shreve, Crump & Low, the high grade of merchandise they carry, and the fine type of clientele they cater to, I was not overcharged. The doctor's fee was fair. When a married woman contracts, her husband must pay. Judgment for $150 for the plaintiff.

The judgment was for *damages* suffered by Doctor B. as a result of Mrs. A's breach of contract and not for the cost of the bridge. Mrs. A. was not entitled to, nor did she receive the bridge.

### Discharge of Patient's Debt by Statutes

The Statute of Limitations may intervene to defeat a creditor's right to take legal action to recover a debt due him. Each jurisdiction has its own provisions and they vary so greatly that no rule can be given to cover every jurisdiction. In Massachusetts the Statute of Limitations is six years, so that if a creditor fails to bring suit within six years from the date of the last transaction, he loses his right to maintain an action thereafter. However, as long as the bill is not six years old, the six-year period may be started anew if part payment is made on the balance. The courts are reluctant to extend relief to him who slumbers on his rights, as the rights of the defendant may be defeated by a lapse of an unreasonable length of time. Witnesses may move away or die, records may be lost or destroyed, and other factors may intervene to defeat his rights. It is a maxim of equitable law that the court looks to the rights of the defendant as well as to the plaintiff. However, part payment of the debt discharged by the Statute of Limitations constitutes an implied promise to pay the debt, and wipes out the legal barrier in most jurisdictions.

A discharge in bankruptcy absolutely and forever discharges the debtor, unless the debtor, after having been discharged from bankruptcy, promises in *writing* and *signs* the promise to pay. That is not a revival of the old debt, as that was wiped out by bankruptcy, but is a new promise to pay. An *oral* promise to pay does not render the debtor liable.

(*End of First Installment*)

120 Boylston Street.

# The Editor's Page

WITH the increasing tendency to consider dental disease in terms of general metabolism, and not as a local pathologic entity, the understanding of calcium metabolism becomes important. Although mouth hygiene is of significant value in the protection of both the hard and soft oral tissues, clinical experience convinces us that the prevention of dental disease is concerned with more than toothbrushing techniques or the chemical and physical properties of dentifrices.

Dentists in increasing numbers are beginning to think of pathology, and to practice therapy in general biologic terms. Disease of the teeth and the tissues of the mouth are not isolated and remote pathologic phenomena. Nerves of the central nervous system and the blood of the general blood vascular system supply the oral tissues; therefore, the biologic laws of immunity and susceptibility, of metabolism and cellular behavior, must be understood in an intelligent consideration of both the etiology and the consequences of mouth-tissue disease. It is well known that disease processes in the mouth may act as foci for systemic infection. Of equal importance is the fact that disturbances of general metabolism may affect the oral tissue.

Cantarow[1] has prepared a book of clinical interest which makes clear the subject of normal and abnormal calcium metabolism. The relationship between calcium deficiency and dental caries should make this work of interest to dentists. Paraphrasing generously from his book, Cantarow apprises us of these facts concerning *calcium metabolism*:

One grain of calcium represents the average daily requirement. Assimilation depends partly upon protein intake. There should be 1 Gm. of calcium for every 100 Gm. of protein. Absorption of calcium is governed chiefly by three factors: (1) *Hydrogen-ion concentration within the intestine.* (Calcium salts soluble in acid solution; relatively insoluble in alkaline. Any factor that increases intra-intestinal alkalinity retards absorption.) (2) *Relative Proportions of other Substances in Diet.* (An excess of fatty acids inhibits absorption by producing insoluble calcium soaps.) (3) *Vitamin D.* (Mobilization of calcium for bones and teeth is dependent in part on the ingestion of foods containing vitamin D, foods previously inert, which have been activated by irradiation and irradiated ergosterol, as well as by exposure of the body to ultraviolet radiation, artificial and solar).

Five factors may increase the *excretion* of calcium, causing a negative calcium balance and decalcification of bone: (1) thyroid extract; (2) parathyroid extract; (3) vitamin D deficiency; (4) excess of certain inorganic elements, particularly phosphorus (an excess of sodium, potassium or magnesium appears to be detrimental to normal calcification); (5) alteration in the acid-base equilibrium (ingestion of mineral acids and ammonium chloride increases the urinary calcium).

Calcium is present in the blood serum within the normal limits of 9 to 11 mg. per 100 cc. Of the total, 4.5 to 5.5 mg. is diffusible (partly in an inorganic state and partly in a citrate-like organic combination; 4.7 to 5.75 mg. is nondiffusible and is bound in some way to the plasma proteins). It is generally believed that there is little or no calcium in the blood corpuscles.

The serum-calcium content decreases with age although there is no significant sex variation. In pregnancy there is a gradual diminution of total serum calcium (early pregnancy, 10.61 mg. per 100 cc.; late pregnancy, 9.45 mg.; first stage of labor, 9.61).

This fact is no doubt of some importance in the frequent rampant dental caries observed in pregnancy. The decrease in calcium during pregnancy is thought to be caused by altered parathyroid function. Collip, one of the foremost authorities on endocrinology, is quoted: "the physiological action of the parathyroid hormone is normally to regulate calcium metabolism and to maintain a definite level of calcium in the circulating blood."

(*To Be Continued in October*)

[1] Cantarow, A.: Calcium Metabolism and Calcium Therapy, Ed. 2, Philadelphia, Lea & Febiger, 1933.

## LETTERS TO THE EDITOR

### Terminology

My attention is called to the use of the word "traumatogenic" in the expression "traumatogenic occlusion," in an article by Doctor Sidney Sorrin in the May, 1934, issue of THE DENTAL DIGEST. While the word in question is a good word, I personally fail to see the necessity of befogging the issue by such introduction. It is certain, however, that nomenclature or terminology must be precise and conspicuous for its clarity. In entering unknown territory, guide posts for direction must be definitely clear, or else travelers will lose their way.

In periodontia there has been so much misunderstanding of signs that the majority avoid the subject as much as possible. There have been certain terms, to wit, *traumatic occlusion* and *occlusal trauma*, which are adequate if used in the right way. In my opinion *traumatic occlusion* is the process of applying a stress upon certain teeth or a tooth in excess of the power of resistance of that tooth or those teeth. In like manner, if I give my opponent in a boxing match a jab in the eye he might get a black eye as a result. Now I contend that the blow in the eye is a *traumatic occlusion* and the resulting black eye is an *occlusal trauma*. Thus the excessive closure of the jaws may produce symptoms of a breakdown in periodontal tissues generally or locally. We have altogether too many words of dubious significance.

*Traumatic occlusion* equals application of excessive stress. *Occlusal trauma* is the result in tissue disturbance through such stress. — E. MELVILLE QUINBY, D.M.D., *Boston*.

### Vincent's Infection

In reply to some of the questions raised by Doctor Warren F. Fox, County Health Officer, El Centro, California (DENTAL DIGEST, June, 1934, page 201) relative to the local incidence of Vincent's infection, I wish to point out the following:

First, the fusospirochetes are most commonly found in mouths with pyorrhea. In a study of more than 400 mouths free from Vincent's infection, I found that the fusospirochetes were present in many instances in such preponderant numbers as to justify a microscopic diagnosis of positive Vincent's infection; therefore, we cannot and should not rely on the microscopic examination alone for a diagnosis of Vincent's infection.

Second, it has been evident to me, as it has been to numerous periodontists who have given the question serious consideration, that we are seeing more and more of the subacute and chronic phases of trench mouth, as it is commonly called. The clinical symptoms correspond with the description Doctor Fox has given. The pronounced symptoms that are usually associated with acute Vincent's infection may be entirely absent in the subacute and chronic stages, or only a few of the symptoms may be present. On only one clinical symptom do I disagree with Doctor Fox. Bleeding of the gums is a constant factor in any phase of trench mouth.

The disease is highly contagious and is most commonly found in children from 2 to 10 years of age, and in adults from 17 to 30.

I believe that intravenous treatment with the arsphenamines is a fallacy and is contraindicated. While the physician should administer relief in cases that come under his attention, Vincent's infection is essentially a periodontal disease and should be treated by the dentist rather than the physician.—JOHN H. NESSON, D.M.D., *Boston*.

Use Coupon on page 332.

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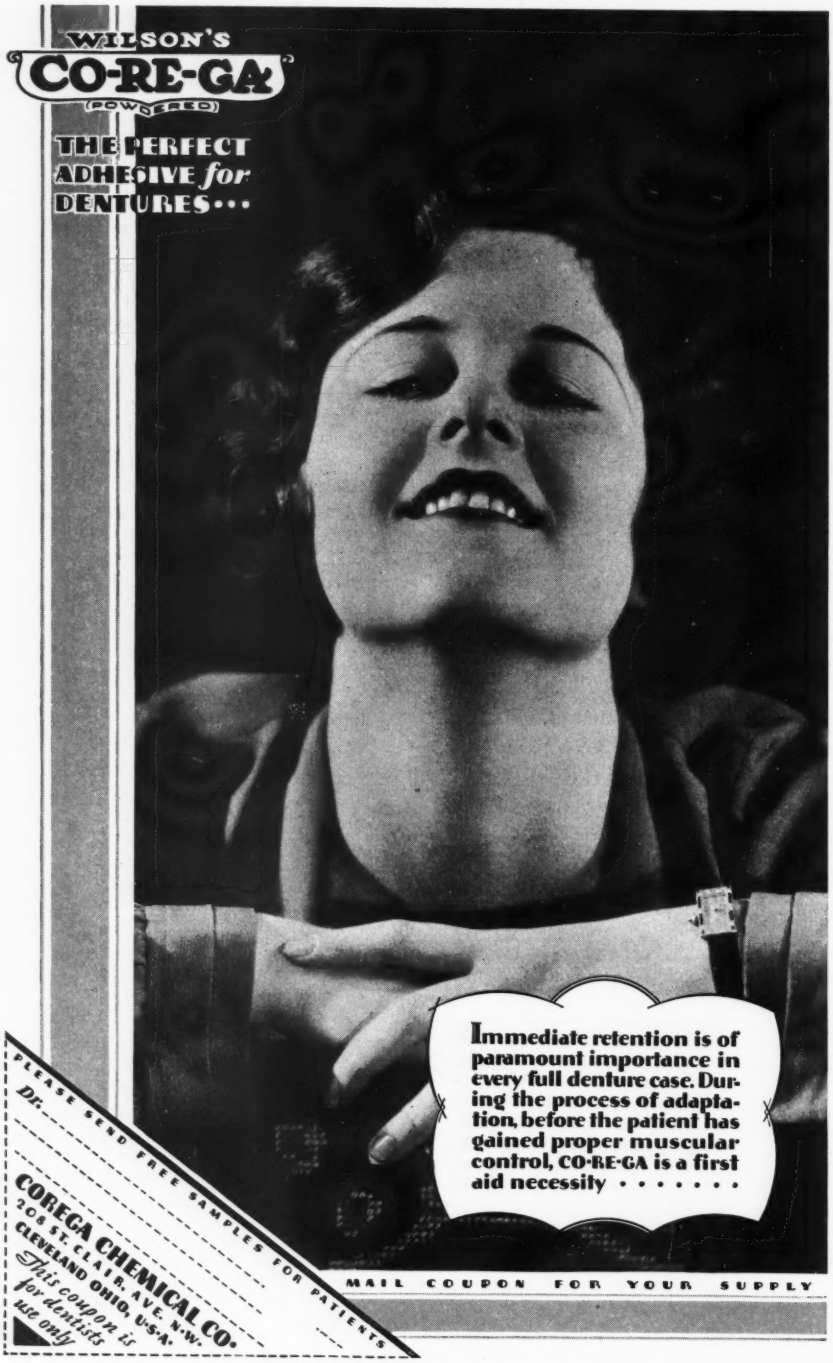


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